A Geographical Study of Some Aspects of Current Economic Development in Malaya

by

K. P. ANG

Thesis presented for the Degree of Doctor of Philosophy of the University of Edinburgh in the Faculty of Social Sciences.

October, 1966.

Preface

Probably several hundreds of books and articles have been written about Malaya during the last few decades and especially during the last few years. Nevertheless, despite the publication in 1955 of "The Economic Development of Malaya" by the World Bank Mission, a full scale study of current economic developments has not yet been made, though some books published recently have covered part of the form. It was therefore thought worthwhile to make the present study.

Malaya ranks as the country with the second highest living standard in Asia, but is, in fact, one of the underdeveloped or developing countries.

It is a common feature of most of the underdeveloped countries that their economies are mainly dependent on one or two commodity products for export, such as cacao in Ghana, coffee in Brazil, tea and rubber in Ceylon, and rubber and tin in Malaya. The disadvantage of this is that their economies are greatly affected by the price fluctuations of the particular products in the world market. Whether the future economic development of these countries should depend on specialization in commodity production or on diversification and development of other lines, will be the main question for this study, in which Malaya is taken as an example.

Due to limitation of the available source of materials and statistics, and to difficulties of analysing statistics issued separately by the two Governments, it has not been possible for the author to make a complete analysis of every sector of the economy; but certain important aspects concerning the economic development are discussed.

Emphasis will throughout be laid on the geographical point of view. It is not proposed to outline detailed policies for future development; but

an attempt will be made to indicate the problems and prospects of economic development.

This study was undertaken by the author during 1964-66, including two periods spent in London in order to make use of the references in several libraries during the summer of 1964 and 1965. Thus, no detailed analysis has been made of events occurring after the establishment of Malaysia on 16th September, 1963, though the statistics used are in most cases up to the end of 1963.

Except when otherwise stated, the study is of the combined area of the Federation of Malaya and Singapore, and this area is referred to as "Malaya"; while the "Federation" is referred to the Federation of Malaya alone.

Acknowledgments

The author gladly takes this opportunity to place on record his appreciation and deep gratitude to:

Dr. C. J. Robertson, for his advice and constructive criticism throughout the preparation of this thesis; Professor J. W. Watson, for his encouragement and help in making financial assistance possible from the Lee Foundation; Lee Foundation, Singapore, for this assistance to enable the author to collect and process the data in London for the two summer periods in 1964 and 1965; Colonial Office, London; Commonwealth Relations Office, London; Ministry of Overseas Development Board, London; British Library of Political and Economic Science, London; School of Political and Economic Science; University of London Library; School of Oriental and African Studies, University of London; Institute of Commonwealth Studies, London; for allowing him to make use of their Libraries; members of the Staff in the Rubber Research Institute of Malaya; Federal Department of Information, Kuala Lumpur; Economic Development Board, Singapore; Natural Rubber Producers' Research Association, London; The International Tin Council, London; The Department of Inter-Library Loan, University of Edinburgh; and other Government Departments in Malaya and Institutions for their ungrudging co-operation; Dr. Ooi Jin-bee and Professor Robert Ho for helpful suggestions at the beginning of this study; Dr. D. N. McMaster and Dr. A. J. Crosbie for valuable critical comments on an earlier draft of some chapters of this thesis. The author is, of course, solely responsible for the views expressed, as well as for any error of analysis or fact which may appear.

Contents

Figures

Tables (Continued) Page

Abbreviations:

C.E.B.	Central Electricity Board.
D.I.D.	Drainage and Irrigation Department.
F.L.D.A.	Federal Land Development Authority.
F.M.S.	Federated Malay States.
J.R.A.S.M.B.	The Journal of the Royal Asiatic Society, Malayan Branch.
J.R.R.I.M.	Journal of the Rubber Research Institute of Malaya.
J.T.G.	The Journal of Tropical Geography.
M.A.J.	Malayan Agricultural Journal.
M.E.R.	Malayan Economic Review.
M.I.D.F.L.	Malayan Industrial Development Finance Company.
R.I.D.A.	Rural and Industrial Development Authority.
R.R.I.M.	Rubber Research Institute of Malaya.
S.S.	Straits Settlements.

Appendix I. Malayan Migration Statistics (1931-1958).

II. Population density in the different States of Malaya, 1931 and 1947.

III. Number of Imports and Slaughter animals in the Federation, 1954-1963.

IV. Output of tin-in-concentrates, and employment in tin-mining, 1948-1963.

V. Indices of trade by commodity sections in the Federation.

VI. Classification of population by locality size.

VII. Economic activity status by state and sex of population aged 10 and over by ethnic groups.

VIII. Average yield of rice in selected countries.

IX. The Malay Reservation Enactment.

X. Types of industries in the Jurong Estates.

Introduction

The Malayan economy is essentially based on the production of primary products for export, on subsistence agriculture and on entrepot trade. Industry, although developing comparatively rapidly, is as yet in the initial stage. The relative importance of the production of primary export products, of subsistence agriculture and of trade varies considerably between the territories of the Federation and Singapore. In the Federation rubber and tin production are the chief bases of the economy accounting for some 77 per cent of the total export income and 40 per cent of gross national product.(1) Singapore, on the other hand, is largely dependent for its commercial prosperity on its position as an entrepot for the surrounding territories in South-East Asia and on the handling of a considerable part of the Federation's exports and imports.

Furthermore, the structure of economic activities is different in the two territories. In the Federation, 58 per cent of the economically active population is engaged in agriculture, forestry and fishing, as compared with only 8 per cent in Singapore. Conversely, manufacturing and construction occupy 20 per cent of the labour force in Singapore, but only about 11 per cent in the Federation. Trade, transport and other services account for nearly 70 per cent of employment in Singapore and about 30 per cent in the Federation.

The population and economic life of Malaya are concentrated largely in the coastal areas and hinterlands on the western side of the peninsula and in

---

(1) See Malaysia, "Official year book", 1963, pp.166-167.

Singapore. Settlement on the east coast is limited to a few scattered pockets and about three-fifths of the entire territory of Malaya is virtually uninhabited.

The economy of western Malaya and Singapore is fairly advanced by Asian standards, with reasonably well-developed systems of roads, railways, ports, coastal transport, communication services, power facilities and other social capital installations. The per capita level of national income, estimated in 1961 at about M$ 800 in the Federation and M$ 1,300 in Singapore. This is second only to Japan in Asia.(2)

Achievement of these economic standards has been possible mainly because of a favourable ratio of population to resources, a natural environment particularly suited to rubber cultivation, rich and abundant deposits of tin and an advantageous location as an entrepot centre. On these bases, Malaya has built an active economy concentrated to a large extent on the production of rubber and tin for export, on the output of a variety of foodstuffs and secondary manufactures mainly for domestic consumption, and on commercial and financial services for the domestic markets and for the large entrepot trade with most of Southeast Asia. The role of European and Chinese capital and enterprise, and of Chinese and Indian labour, has been of special significance in the economic development of Malaya and accounts for the heterogeneous character of the population.

In a geographical study of economic development in Malaya, the physical background must not be ignored and it is accordingly briefly described in

---

(2) See IBRD, "Report on the economic Aspects of Malaysia", (1963) p.2.

chapter one, followed by an account of the historical background of development in chapter two, since this has had a great influence on the economic development of Malaya. At the same time, it is essential to indicate in some detail, the features of current economic development, and this is done in chapter three.

The study is divided into two parts, all these features and background analyses and descriptions are included in part one, devoted to the basic features of the economy, while in part two problems and prospects, analysis and discussion are deepened and widened.

Although economic progress in Malaya during the past decade, and particularly in the last few years, has been impressive, there are difficult problems to be faced in the years ahead. Most of these problems are not new, but they are becoming more pressing.

First there are pressures arising from the increase in the population and labour force. It is estimated that the rate of increase of population during the last few years has been over 3 per cent per annum, one of the highest rates in the world. This trend is expected to continue in the near future. This increase is now being reflected in a parallel rise in the growth rate of the labour force,(3) so that there are now approximately 50 per cent more new job-seekers each year than was the case several years ago. Furthermore, in both the Federation and Singapore, there are signs of growing unemployment.

---

(3) During the five years of the First Plan of the Federation for example, the total labour force increased by about 310,000. In the Second Five-Year Plan period, approximately 340,000 workers will be added to the country's labour force.

The problems of merely keeping unemployment from rising and keeping per capita standards of social services and incomes from falling will be substantial. In the period of the First and Second Five-Year Plans in the Federation for instance, the number of children of primary school age is estimated to have increased by about 200,000.(4) Obviously, it is necessary to produce more food, clothing, housing and other necessities such as schools and health services for the growing population and to provide jobs for the country's increasing population of working age. In other words, there is a need to achieve improved standards of living. These demographic aspects of the economic development will be discussed in more detail in chapter four.

Although the Federation has one of the highest standards of living in Asia, development in the past has been concentrated in the urban areas with the result that in many of the rural areas living conditions remain poor. There is therefore an urgent need to redress this imbalance in development between the urban and the rural areas.

The rural economy of Malaya can be considered in two sectors: the advanced sector, comprising estate-type agriculture, mining, and commercial enterprises in the rural areas; and the backward or peasant sector, comprising the agricultural smallholdings producing rubber, copra, and rice, and coastal fishing. The advanced sector is owned and managed mainly by Europeans, Chinese or Indians, whilst the backward sector is primarily Malay.

Rural poverty and backwardness have remained unchanged for several decades, although a little progress has been made in the last few years. Professor U.A. Aziz

---

(4) See Malaysia, "Official Year Book", 1963, p.170.

surveyed 317 families in Nyalas, which gave monthly household consumption figures ranging from M$ 60 to M$ 78.(5) The average monthly income per household ranged from only M$ 50 to M$ 75. The cause of this poverty and the problems it presents for rural development will be discussed in chapter five.

While these problems are becoming more pressing, the prospects for natural rubber and a number of other traditional sources of external earnings are becoming more serious. As indicated, the Malayan economy is heavily dependent on rubber, for about 30 per cent of total employment, and about 53 per cent of the value of total exports. Rubber prices have fallen from a recent high of M$ 1.06 a pound in 1960 to 72 cents in 1963, and the trends are even downward.* They may fall still further during the next five to ten years as a result of greatly increased competition from synthetics. On the basis of present technology in synthetics, the price of natural rubber should stabilize at a level which would still yield a reasonable return on investment and an adequate income to the smallholder, given production of high-yielding varieties.

But there remains a risk, however remote, that there will eventually be major technological advances in synthetics which could lead to even lower prices. The economy will remain vulnerable to this risk until significant progress has been made in developing alternative sources of income and employment. This does not mean that replanting or new planting of rubber should be stopped. But it does mean that efforts should be intensified to develop production in other lines at a substantially faster pace.

---

(5) Dollar figures are in Straits currency throughout. One Straits dollar (M$) is equivalent to approximately 30 cents U.S., 2s. 4d. British sterling, or 2s.11d. Australian.

* Natural rubber prices fell to 68 Malayan cents in 1964.

The problem of finding adequate alternatives to rubber is made more difficult by the uncertain prospect in the other main traditional export sectors. Tin, which ranks second in Malayan export earnings is likely to remain stable at best, because of supply limitations and competition from substitutes. The entrepot trade of Singapore and Penang is also faced with the prospect of slow growth or even decline. This trade has come to be as important as tin in total Malayan external earnings,(6) mainly because of the services which traders in these centres have been able to render the ultimate purchasers by careful grading and processing of raw materials or by redistributing a great variety of manufactured goods among neighbouring countries. Perhaps in the long run there is some danger to the entrepot trade through other Southeast Asian countries developing alternative ports and merchandising facilities. Therefore, neither tin mining nor entrepot trade can be relied on as sources of new income or job opportunities.

These problems have been recognized by the governments of Malaya for some time and successful efforts have been made to increase total investment, and to provide substantially expanded social services, especially during the past few years. Progress has also been made towards economic diversification, but, given the magnitude of this task, the change in structure of the economy has inevitably been rather slight so far.

Further efforts to expand investment, especially the development of the manufacturing sector, and to further diversify both the agricultural and industrial sectors must still be made.

In the last two chapters, we shall discuss these aspects in greater detail.

---

(6) See IBRD, "Report on the economic aspects of Malaysia", (1963). Table VII.

FIG. 1 SOUTH-EAST ASIA, 1963

PART ONE

BASIC FEATURES OF ECONOMIC DEVELOPMENT

FIG 1 SOUTH-EAST ASIA, 1963

FIG 2 POLITICAL DIVISIONS 1963

BASED ON MAP OF MALAYA. SURVEY DEPARTMENT. (No. 20 - 1959).

Chapter I

General Background

Physical features

Malaya is at the southern end of the peninsular part of South-East Asia. Its northern neighbours, which are reached after passing through the Kra Isthmus, are Burma and Thailand. To the south are the many large islands of the Republic of Indonesia which include Java and Sumatra. Towards the east is Borneo. (Fig. 1)

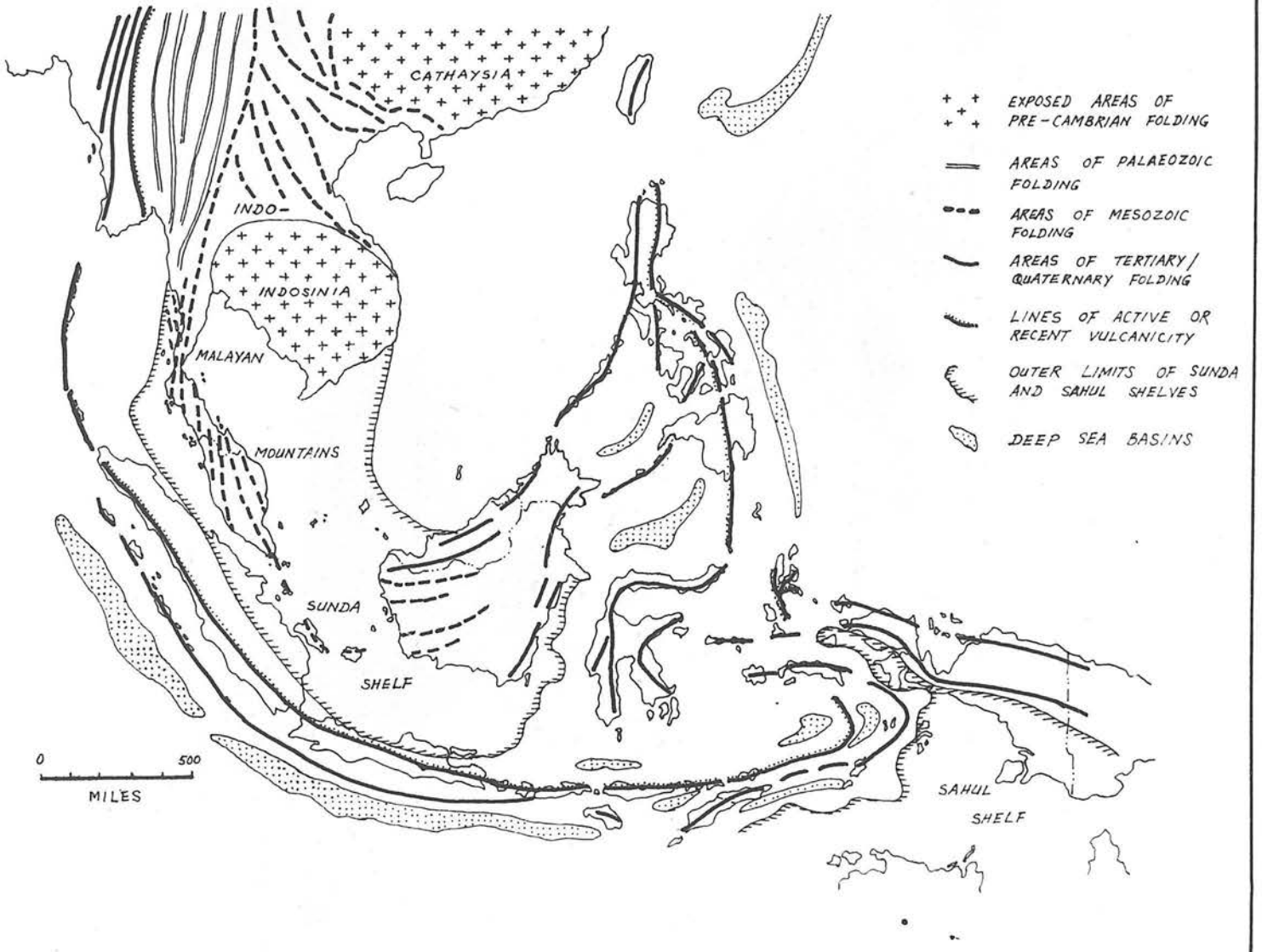
There are eleven states in the Federation (Fig. 2). To the south is the small island known as the State of Singapore which is reached by a causeway three-quarters of a mile long.

Generally we may say that the Peninsula of Malaya is mountainous, for over one-quarter of the land is above 1,000 feet. The mountains, which are thickly forested, fall to wide coastal plains. Off the coasts are the very important Malacca Strait to the west and the South China Sea to the east. (Fig. 1).

Malaya extends from latitude $1^{\circ}20'$N. to latitude $6^{\circ}40'$N., and from longitude $99^{\circ}35'$E. to longitude $104^{\circ}20'$E. Kuala Lumpur, the capital of the Federation is situated at latitude $3^{\circ}10'$N. and longitude $101^{\circ}61'$E. The total length of this long and narrow peninsula is about 500 miles and about 200 miles wide at its broadest point. The equator does not pass through the Peninsula but is only about 80 miles south of Singapore.

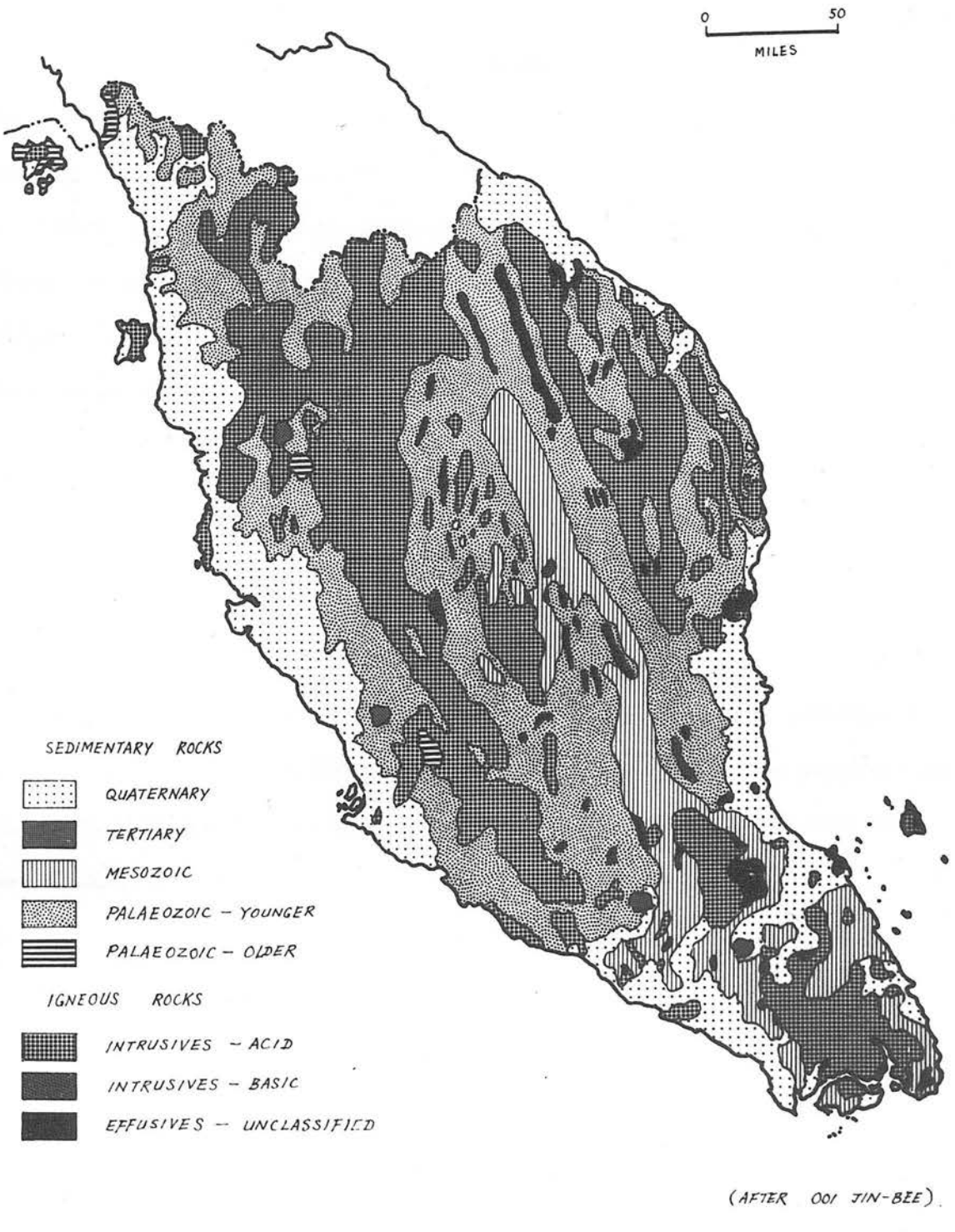
The great seaways between the west (Europe and Suez) and the east (Hong Kong, China and Japan) pass south of and around Malaya. Malaya has been called the "crossroads of the world". Surrounded as it is by the countries of continental South-East Asia and the island territories, its ports act as

FIG 3 STRUCTURE OF SOUTH-EAST ASIA



(AFTER FISHER)

FIG 4 GEOLOGY



(AFTER OOI JIN-BEE)

entrepots for these lands. Its position is of great importance to Europe, Asia and South-East Asia.

Geology. The Malay Peninsula forms the continuation of a series of mountain ranges extending from Eastern Burma southward through Thailand, and eventually swinging east to link with Borneo. Except for some local variations the dominant regional trend of the fold-axes (i.e. mountains and valleys) in Malaya is approximately south-southeast. (Fig. 3)

Almost half the total surface area of the country consists of granite (1) which forms the Main Range and the Trengganu Border Range, as well as lesser ridges (Fig. 4). The granite is believed to be of Jurassic age and is therefore, geologically speaking, younger than most of the other rocks of Malaya. During its emplacement the older sedimentary rocks into which it was intruded were folded and buckled into the ranges that make up the present Malayan topography.

The granite is fairly uniform in character over most of Malaya, and it is the ultimate source of most of the economic minerals found in the country.

The oldest rocks of the sedimentary succession so far positively identified occur in the extreme northwest of Malaya, in the Langkawi Islands, where they form a thick sequence of quartzites and shales, named the Machinchang Formation, and belonging to the geological period known as the Cambrian. They are overlain by a series of predominantly calcareous rocks (limestones), which are named the Setul Formation, and belong to the geological periods known as Ordovician and Silurian. The Setul Formation is

---

(1) See G. Owen, "A provisional classification of Malayan soils" in Journal of Soil Science, Vol. [illegible]. Pt. 1, p.21.

chiefly found in the Langkawi Islands and in Perlis, but three isolated occurrences in the Mahang area of Kedah, in the Kinta Valley of Perak and near Kuala Lumpur, are also known. (Fig. 4)

The bulk of the Malayan sedimentary rocks however falls within the geological periods ranging from the Carboniferous to the Triassic, and it may be concluded that the greater part of Malaya lay below the sea during that time.(2) The rocks consist of repeated series of quartzites (sandstones) and shales with interbedded limestones and volcanic rocks, which are not always easy to distinguish from one another, and have been subdivided into a number of groups and formations. The oldest of these is the Kuatan Group, a sequence of predominantly shaley rocks belonging to the Early Carboniferous. This is followed in turn by the Bentong Group (consisting predominantly of quartzite); the Raub Group (consisting chiefly of limestones); and the Lipis Group (consisting chiefly of quartzites and shales).(3) The most extensive development of these rock groups is found in Pahang. From Pahang the Bentong and Raub groups continue into Kelantan, Trengganu, Negri Sembilan, Selangor, Perak, Kedah, and Perlis, while the Lipis Group continues chiefly into Johore. (Fig. 4)

One of the most outstanding topographical features of Malaya is formed chiefly by rocks of the Raub Group. They are the prominent vertically-sided limestone hills situated in the neighbourhood of Kuala Lumpur (Batu Caves and Bukit Takun) in Selangor; in Ipoh in the Kinta Valley of Perak: and at many places in the States of Pahang, Kelantan, Kedah and Perlis. Most of these

---

(2) See Ooi Jin-Bee, "Land, People and Economy in Malaya" p. 8. See also C. A. Fisher, "South-East Asia" pp. 11-14.

(3) See Scrivenor, J. B. "The structural geology of British Malaya", Journal of Geology, Vol. 31 (1923), pp. 556-570, and also "The Geology of Malaya", (London, 1931).

hills are late Carboniferous or Permian in age; they are derived from thick beds of limestone originally laid down in the sea, subsequently raised up above sea-level, and later exposed and isolated by the rapid action of tropical weathering on the surrounding rock.(4) Their vertical faces usually result from the fact that corrosion by acidic groundwaters is more rapid at the base than near the top, so that the sides are being constantly undercut and collapse as a result. These hills are honey-combed by caves, from which quantities of bat guano are obtained for use as fertilizer.

A certain amount of volcanic activity took place in Malaya during the Permian period (as well as just before and after the Permian). The evidence left by the volcanic eruptions of that age consists of a series of volcanic tuffs and lavas that occur interbedded with the sedimentary rocks of the Raub Group and have been described in the literature as the Pahang Volcanic Rocks.(5) These rocks often give rise to soil that is more fertile than that found overlying sedimentary rocks or granite, and are therefore of some economic importance to agriculture.

Another series of sedimentary rocks, consisting chiefly of quartzites and pebble beds, is found near Gunong Gagau the tri-State corner Kelantan-Trengganu-

---

(4) See Richardson, J.A., "An outline of the geomorphological evolution of British Malaya"., Geog. Mag. (May-June, 1947), pp. 129-144. Hutchinson, C.S., "The basement rocks of Malaya and their paleogeographic significance in Southeast Asia", Amer,J.Sci. (Mar., 1961), 181-185.

(5) See Dobby, E.H.G., "Southeast Asia" (London, 1950) pp.89-90. Fitch, F.H., "The Geology and Mineral Resources of the Neighbourhood of Kuantan, Pahang" (Kuala Lumpur, 1952). Richardson, J.A., "The Geology and Mineral Resources of the Neighbourhood of Raub, Pahang, Federated Malay States, with an Account of the Geology of the Raub Australian Gold Mine" (Singapore, 1938). Scrivenor, J.B., "Geological and geographical evidence for changes in sea-level during ancient Malay history and late pre-history", J.Roy.Asiat.Soc.Malay.Br. (Mar., 1949), 107-115.

Pahang and has been named the Gagau Formation. Plant remains indicate that the age of these rocks is late Jurassic or early Cretaceous, and their geological setting shows that they were not disturbed by the emplacement of the granite.(6) It is therefore believed that these rocks were formed after the intrusion of the granite, although the time interval between the two events may have been very short.

Tertiary rocks in Malaya are represented by five small outcrops of shales and sandstones associated with thin bands of soft coal and lignite. The most famous of these are the deposits of Batu Arang, Selangor, which were worked for coal until 1960.(7) Similar deposits occur at Enggor (Perak), Bukit Arang (Perlis), and at a few localities in Johore.(8) The scarcity of Tertiary rocks, the only ones in Malaya known to contain organic remains, is one of the main reasons for the view that an occurrence of petroleum in Malaya is unlikely.

---

(6) See Paton, J.R., "Jurassic/Cretaceous sediments in Malaya". Nature (London, 1959), p. 231. Alexander, J.B., "Pre-Tertiary stratigraphic succession in Malaya". Nature (London, 1959) p. 230.

(7) See Willbourn, E.S., "An Account of the Geology and Mining Industries of South Selangor and Negri Sembilan" (Calcutta, 1922). Roe, F.W., "The Geology and Mineral Resources of the Fraser's Hill area, Selangor, Perak and Pahang, Federation of Malaya, with an Account of the Mineral Resources" (Kuala Lumpur, 1951). Roe, F.W., "The Geology and Mineral Resources of the Neighbourhood of Kuala Selangor, and Rasa, Selangor, Federation of Malaya, with an Account of the Geology of Batu Arang Coal-Field" (Kuala Lumpur, 1953).

(8) See Savage, H.E.F., "The Geology of the Neighbourhood of Sungei Siput, Perak, Federated Malay States, with an Account of the Mineral Deposits" (Singapore, 1937). Scrivenor, J.B., "The physical geography of the southern part of the Malay Peninsula", Geogr.Rev. 11. (1921), 351-371. Willbourn, E.S., "The Geology and Mining Industries of Kedah and Perlis", J.Roy.Asiat.Soc., Malay. Br. (Dec., 1926), 289-332.

The youngest formations encountered in Malaya are extensive tracts of Quaternary sands and clays, found in river valleys and coastal plains.(9) These deposits, known as alluvium, are not consolidated, and are formed by the erosion of the older rocks over long periods of time, and the redeposition of the eroded material by rivers and by the sea. In many parts of Malaya, and particularly in the vicinity of the granite areas, the alluvium may contain valuable concentrations of tin-ore, and it is in fact the most important source of tin-ore in the country.

For many years Malaya has been the world's leading producer of tin, the ore of which (cassiterite) is mined from alluvium, and occasionally from hard rock, near the margins of the granite where it has been concentrated naturally by geological processes. Recovery is chiefly by dredges and gravel pumps, but underground mining also takes place, and the largest single underground tin-mine in the world is situated at Sungei Lembing in Pahang. By-products of alluvial tin-mining include minerals such as columbite, scheelite, ilmenite, monazite, xenotime, zircon, and rutile, which are of varying commercial interest in accordance with fluctuations in their price and demand.

Iron-ore is mined on a large scale at Dungun in Trengganu, and on a somewhat smaller though increasing scale in the States of Kelantan, Perak, Kedah, Pahang, and Johore. Aluminium-ore (bauxite) is mined in Johore, while gold occurs in economic quantities in Kelantan, Pahang, and Perak. Deposits of other ores, such as those of tungsten, lead, manganese, copper, and silver have been worked in the past in different parts of the country.

---

(9) See Robinson, A.G., "The training of alluvial rivers", Malay. Forester, 10 (1941), pp. 42-48. Walker, D., "Studies in the Quaternary of the Malay Peninsula. I. Alluvial deposits of Perak and the relative levels of land and sea", Fed. Mus. J. I and II (1954-55), pp. 19-34.

Soil. Soil may be defined as the superficial layer of fairly loose earth which results from the weathering, decomposition and transformation of the underlying parent-rock through the action of physico-chemical and biological agents. It is a medium in which live a very large number of plants, animals and micro-organisms.

The type of soil which develops in any area depends on the parent material, climate and organisms in that area. Time is also classed as a soil-forming factor because soils undergo a process of evolution from parent material into mature soils. Surface relief, which influences the water relationships in soils and also partly determines the extent of soil erosion, is generally regarded as another formative factor. The major soil-forming factor in the Malay Peninsula is the climate. The soil-differentiating factor is the parent material, and Malayan soils have been classified provisionally according to their parent material, and on a geological basis. The influence of the parent rocks in determining soil types is thought to be greater than that of climate. Climate in a relatively small area such as the Malay Peninsula is regarded from the pedological point of view as being fairly uniform.

Unfortunately, no systematic detailed study has been made of the development, distribution and classification of the soils of Malaya, although the subject has been dealt with in several papers published in Malayan journals (e.g. "Journal of the Rubber Research Institute of Malaya"; "Malayan Agriculture Journal"). Until last decade, a notable advance was made in 1951, when Owen published a provisional classification of Malayan soils, in which he proposed names for a number of soil types then known to exist in the peninsula. (10)

---

(10) See Owen, G., "A provisional classification of Malayan soils", Journal of Soil Sci., Vol. 2, 1951, pp. 20-42.

In all these studies the importance of parent material was recognized and repeatedly stressed, and frequent reference was made to existing geological maps. However, apart from a map of the Rubber Research Institute's Experiment Station at Sungei Buloh,[11] no true soil maps were published, and the only systematic surveys known to have been made of extensive areas were those commissioned by certain large planting companies for their own properties.

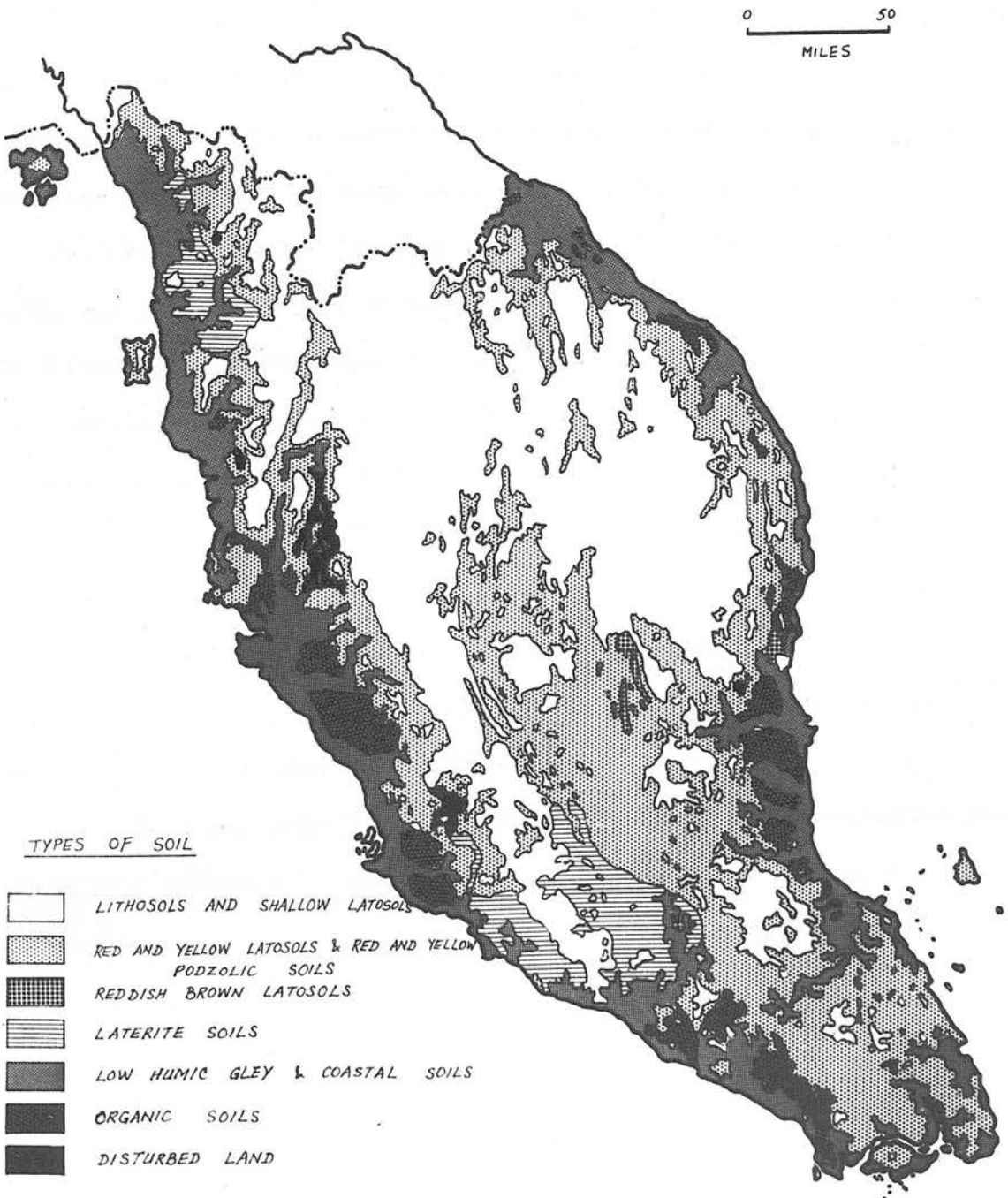
Later, in the nineteen-fifties, Coulter and others carried out a number of soil surveys of some of the major swamp areas along the west coast of Malaya.[12] These surveys were designed primarily to determine the suitability of the soil for padi before planning drainage and irrigation facilities. They sampled soils at regular intervals along specially cut traverse lines, or rentis; these samples were mechanically and chemically analysed, and soil maps showing the principal textural groups were produced. During the same period, a number of detailed maps of both sedentary and alluvial soil types were prepared for a few areas of developed land in several regions of the country, using profile characteristics as the basis of the classification. In the mid-fifties, reconnaissance soil surveys of some extensive padi areas were undertaken. Recently, in 1962, a completed soil map of Malaya has been

---

(11) See Akhurst, C.G., and Haines, W.B., "Description of soils at the Rubber Research Institute Experiment Station", in Journal of the Rubber Research Institute of Malaya, Vol. 3, 1931, pp. 174-181.

(12) See Coulter, J.K., "The Kuala Langat (North) Forest Reserve", M.A.J., Vol. 39, 1956, pp. 185-90.
Coulter, J.K., "Development of the peat soils of Malaya", M.A.J., Vol. 40, 1957, pp. 188-99.
Coulter, J.K., McWalter, A.R., and Arnott, G.W., "The Trans-Perak Swamp", M.A.J., 161, 39, 1956, pp. 99-120.

FIG 5 SOIL



BASED ON MAP PRINTED BY THE SURVEY DEPARTMENT (No. 30 - 1963).

compiled by W. P. Panton.(13) According to Panton, the great soil groups that occur in Malaya may be briefly summarized as follows: (Fig. 5).

(i) Lithosols and shallow yellow latosols on steep mountainous and hilly land. This group covers some 40 per cent of the total area of Malaya, and is one of the least studied of local soil groups, as it is considered to be of very low agricultural potential, due to unfavourable topography rather than to inherent infertility. These soils mainly derived from granitic rocks.

(ii) Red and yellow latosols and red and yellow podzolic soils. These soils can be divided into three types: (a) derived from acid igneous rocks, developed on gently to strongly sloping land, mostly of average fertility; (b) derived from various sedimentary rocks, developed on gently to strongly sloping land of variable fertility; (c) derived from older and sub-recent alluvium, developed on flat, gently sloping and strongly sloping land, mostly of below average to average fertility.

(iii) Reddish-Brown latosols, derived from basic and intermediate igneous rocks. These soils mainly developed on gently to strongly sloping land, mostly of above average fertility.

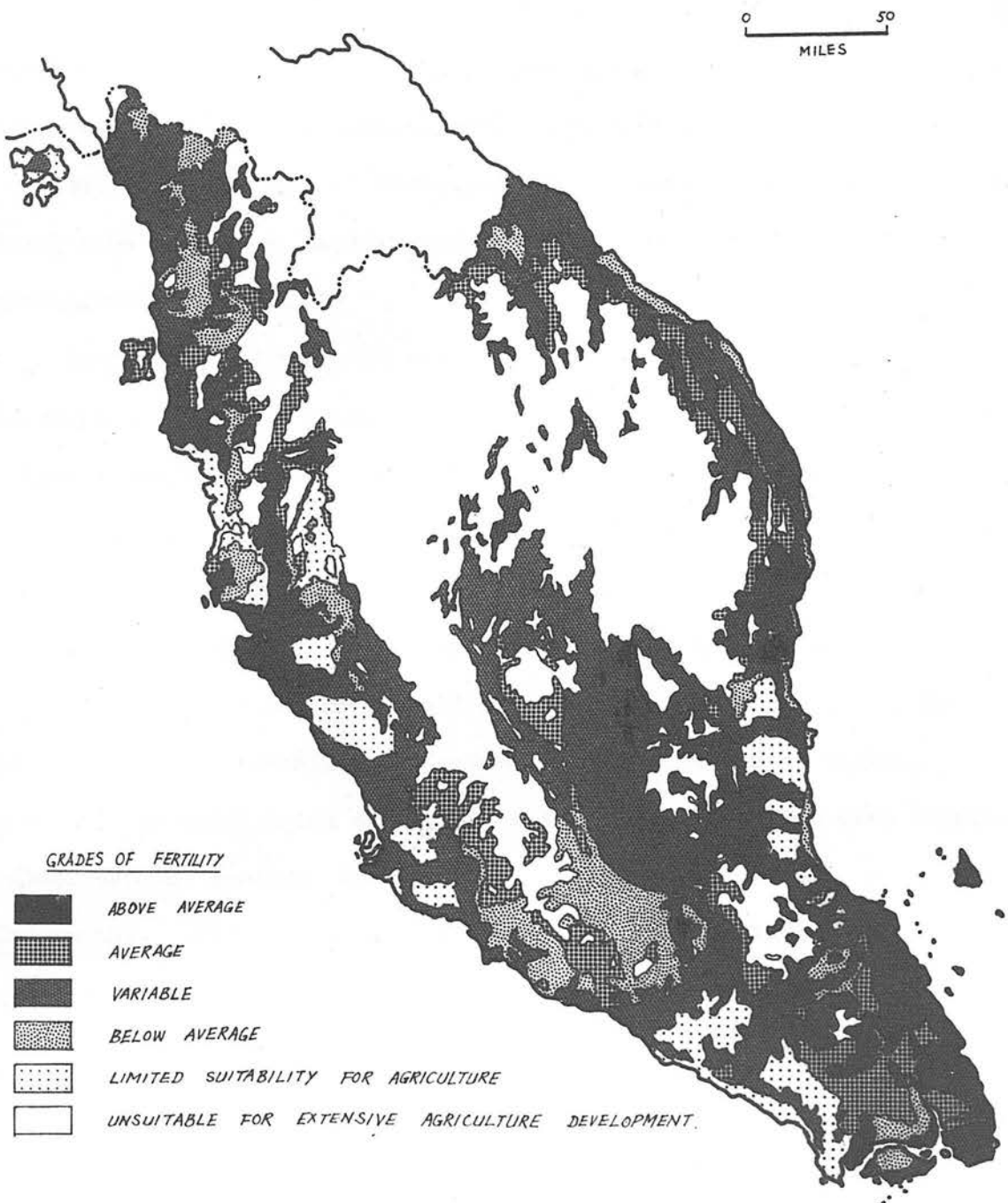
(iv) Laterite soils. Under existing climatic and topographic conditions, the parent materials of these soils are mainly shales and phyllites. They developed on gently to strongly sloping land, mostly of average to below average fertility.

---

(13) See Panton, W.P., "The 1962 Soil Map of Malaya", The Journal of Tropical Geography, Vol. 18. 1964, pp. 118-124. "Reconnaissance soil survey of Trengganu", Department of Agriculture Bulletin No. 105 (Kuala Lumpur, 1958). "Reconnaissance soil survey of Kelantan", M.A.J., Vol. 43, 1960, pp. 87-103. "Federal Experimental Station, Serdang", M.A.J. Vol. 37, 1954, pp. 136-45. "The Federal Experiment Station, Jerangau, Trengganu", M.A.J., Vol. 40, 1957, pp. 19-29. "The Bukit Goh Forest Reserve, near Kuantan, Pahang", M.A.J., Vol. 41, 1958, pp. 3-9.

FIG 6

GRADE OF FERTILITY OF SOIL



BASED ON SOIL MAP OF MALAYA, PREPARED BY STAFF OF THE SOIL SCIENCE DIVISION, 1962. KUALA LUMPUR.

(v) Low humic gley soils and coastal soils. These mainly developed on the main coastal plains of western Malaya and the lower valleys and flood-plains of the larger east coast rivers, of very variable fertility.

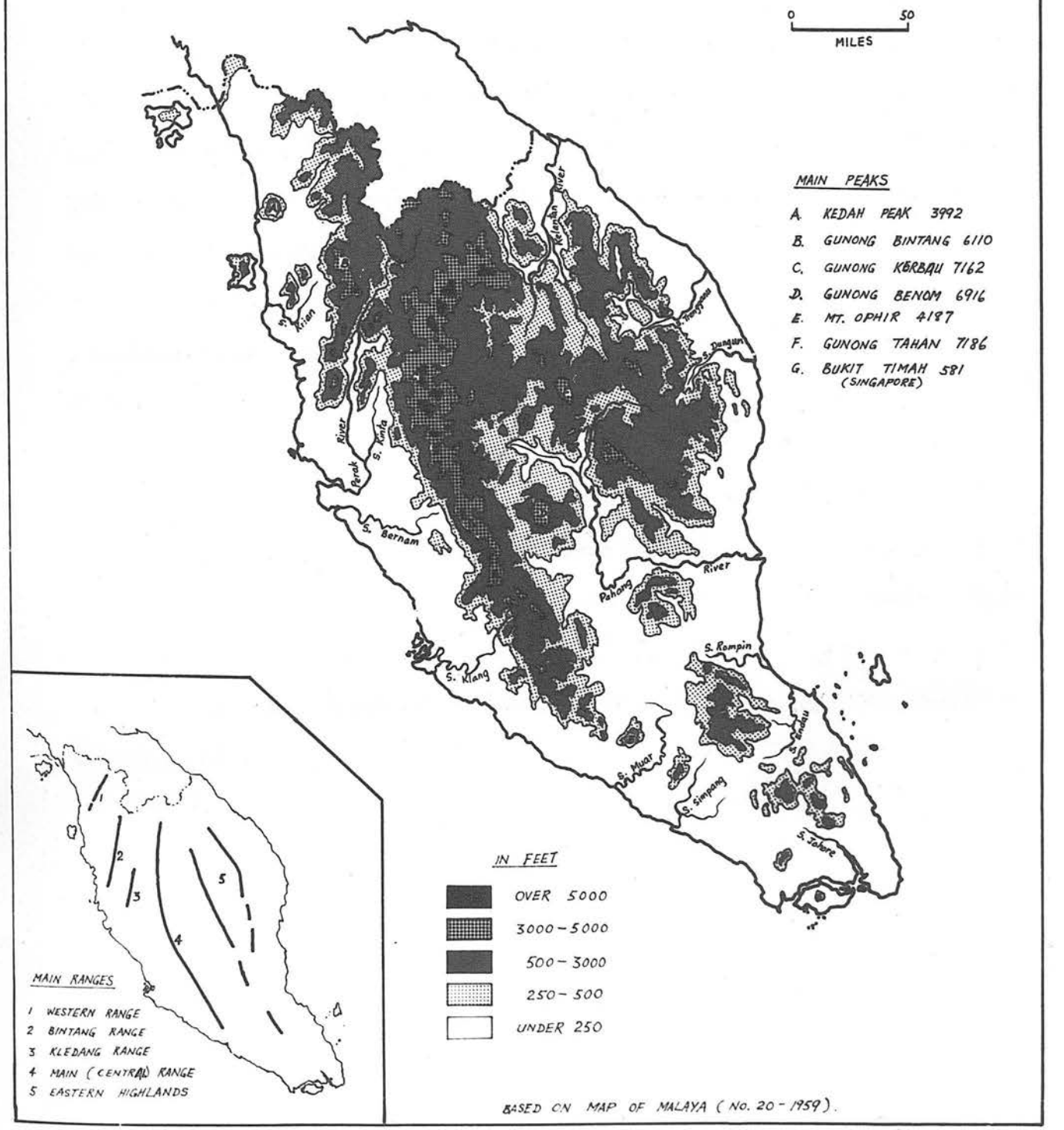
(vi) Organic soils, principally peats, with some mucks, developed over mineral alluvial soils in poorly drained situations. These soils are of limited suitability for agricultural development.

(vii) Disturbed land. Disturbed soils occupy about 2 per cent of the total area of Malaya, mostly held on mining leases. They have little or no agricultural potential.

Because of the very wet equatorial climate, most of Malaya's soils are lateritic. They are rich in iron oxides and are seen as yellowish or reddish soils. Generally, much of the soil is of low fertility (Fig. 6) and the application of fertilizers is either desirable or essential for both annual and perennial crops. It is significant that such perennial crops as oil palm and rubber are fertilized as a matter of routine on the more progressive estates. The undulating character of a large proportion of the land from the littorals to the foothills, in combination with the heavy rainfall, also makes the soils in these areas especially susceptible to erosion when cultivated unless careful conservation practices are observed.

Topography. The coastline of Malaya is over 1,200 miles in length and large parts of it are swampy. A coastal plain extends round most of the coast and is of varying width. This plain is only just above sea level in many parts and is often inundated. The greatest area of swampy coast is in southern Malaya, especially in the state of Johore. The disadvantage of swamp is mainly felt on the western coast but on the east coast large deposits of sand and silt hold up the development of transport, agriculture and even ports.

FIG 7 RELIEF


0 50
MILES
MAIN PEAKS
A. KEDAH PEAK 3992
B. GUNONG BINTANG 6110
C. GUNONG KERBAU 7162
D. GUNONG BENOM 6916
E. MT. OPHIR 4187
F. GUNONG TAHAN 7186
G. BUKIT TIMAH 581 (SINGAPORE)
S. Kian
S. Kinta
Perak River
S. Bernam
Pahang River
S. Rompin
S. Klang
S. Muar
S. Simpang
S. Endau
S. Tabor
S. Dungun
S. Trengganu
Kelantan River
IN FEET
OVER 5000
3000 – 5000
500 – 3000
250 – 500
UNDER 250
MAIN RANGES
1 WESTERN RANGE
2 BINTANG RANGE
3 KLEDANG RANGE
4 MAIN (CENTRAL) RANGE
5 EASTERN HIGHLANDS
BASED ON MAP OF MALAYA (No. 20 - 1959).

Inland from the coastal plains are foothills which are most prominent on the western side and are largely of sandstone and limestone. In many parts these have been reduced by weathering to form large stretches of cultivable land.

The mountain ranges of Malaya are more or less parallel to one another and run from north to south through the Peninsula. They are of varying lengths and the Main Range is the longest of all and forms the backbone of Malaya. Between the ranges are important river valleys or tributary valleys, such as are formed by the Perak and Kinta rivers. Though the average height is only five thousand feet, the ranges are barriers to transport from east to west. But there are two gaps in the Main Range used by west-east roads. The first of these is from Seremban to Kuala Pilah and then eastwards; the other is from Kuala Lumpur to Bentong and Temerloh, reaching the coast at Kuantan. Since the land south of the Main Range, largely in the state of Johore, is very much flatter, several roads are able to cross the country in southern Malaya.

More than ten ranges may be observed in Malaya, but the most well-known are (Fig. 7):-

(1) Western Range, in north-west Malaya, through western Kedah in Penang and farther south. It includes the famous Kedah Peak.

(2) Bintang Range, named after Gunong Bintang, its highest point. It lies to the north-west of the Perak river and runs as far as the Thailand border.

(3) Kledang Range, between the rivers Perak and Kinta.

(4) Main Range, the backbone of Malaya and the main watershed of the country. It runs from the Thai border to just north of Malacca, and is often

called the Central Range, even though it is more to the west of the country than the east, or the Buffalo Range, after a high point called Gunong Kerbau. It is higher in the north than in the south and like all other ranges is thickly forested.

(5) Eastern Highlands, including the Trengganu Highlands and the Tahan Range, with Gunong Tahan, the highest mountain in Malaya. These are close to the eastern coast.

The ranges continue as isolated hills into Johore, Singapore and the islands south of Malaya.

The highlands have limited use, such as for tourist centres, as at Cameron Highlands, and for hydro-electric power at the Chenderoh Dam. Future development may include greater extraction of timber, the production of commercial vegetables, as at Cameron Highlands, and exploitation of metal-liferous veins in the granite. The difficulty of transport and the lack of labour in the area makes it impossible at present to exploit the highlands of Malaya further.

Drainage. The main watershed of the country is the Main Range, and rivers flowing eastward either begin in this range or in the Eastern Highlands. They include the Kelantan and the Trengganu in the north, whose beds are examined by the dulang-washers for gold and tin-ore, and the Pahang farther south, which is over 200 miles long and is navigable for a large part of its length. All these rivers are long and slow-moving, and in their lower courses (old-age stage) tend to deposit sands and silts as sandbanks, which impede river navigation and the development of harbours on the east coast. At their mouths, as they enter the South China Sea, the formation of deltas is prevented by the strong waves and currents of the sea which spread the deposited material along the coasts in flattened spits.

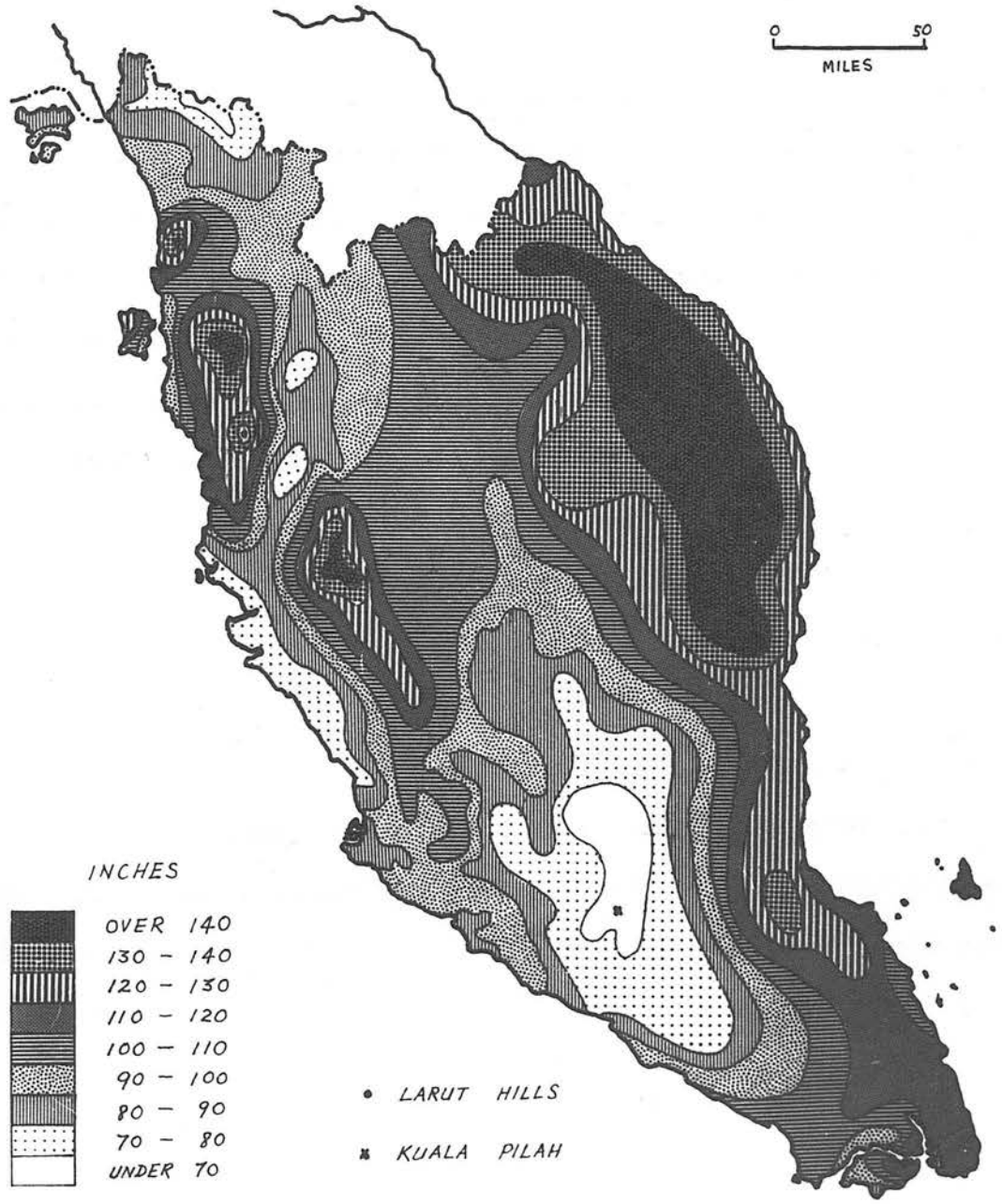
Rivers flowing westwards from the Main Range, include the Perak, which is navigable to Telok Anson, and its important tributary the Kinta, which flows through the country's richest tin-mining area. The river Muar is farther south and reaches its lower course long before it nears the coast. Hence it meanders over a wide area as it moves towards the sea. Some of these meanders have been abandoned as the river has changed course and are used as rich agricultural areas by the local people, as at Pulau Penarek. At their mouths as they enter the Malacca Strait mud is deposited and mangrove swamp, with both sea and fresh-water types, is abundant.

In their upper courses (youthful stage) the rivers flowing eastwards have extremely steep gradients and some fall as much as 3,500 feet in 12 miles. This gives the potential for hydro-electric power, since not only is the gradient present but the rainfall is reliable. This form of power is gradually being developed in Malaya, especially at the Chenderoh Lake, in Perak. The only other really large lake in Malaya is the swampy one of Tasek Bera in Pahang, which many aborigines depend upon for their source of fish.

Other rivers which are locally important include the Kedah, upon which is Alor Star; the Klang, which passes through Kuala Lumpur; the Simpang, upon which stands Batu Pahat; the Johore; the Endau; the Rompin; the Kuantan, with the small port of the same name at its mouth; and the Dungun.

It has already been seen that the rivers entering the South China Sea attempt to form deltas, but no true deltas are in fact formed. Long flattened sandspits are seen at the mouths of most rivers and a good atlas map will show these at the mouth of the river Kelantan and the Trengganu. The atlas map will also show examples of river capture, particularly where the river Muar

FIG 8 MEAN ANNUAL RAINFALL



(AFTER DALE).

has captured the headstreams of the river Serting in northern Johore. The estuaries of most rivers are wide so that where bridges do not exist, as at the mouth of the Muar and the Simpang, ferries are used to convey people and vehicles from one side to the other.

Climate. Malaya has a heavy rainfall and a fairly uniform temperature throughout the year. It is affected by two trade wind systems, the north-easterlies north of the equator and the south-easterlies, south of the equator. The south-westerlies are the deflected south-east trades from south of the equator. Malaya's equatorial position, narrowness as a peninsula, surrounding seas and mountainous topography all affect the climate in different parts of the country.

It would not be true to say that Malaya has one climate, for there are substantial differences between north and south, as well as between west and east. Certain areas lie in the rain shadow of the higher ranges, so that these inland parts have their own local, drier climate. (Fig. 8) In most parts of the world the year may be divided into seasons according to the average temperature and rainfall. For the reasons given above we cannot use temperature to differentiate between seasons in Malaya, nor can we fairly use the amount of rainfall received in one year, since over much of the country it varies with relief. In fact, the periods when heaviest rainfall arrives and when the driest periods occur are a better criterion for dividing the year into "seasons", if this is found necessary at all.

Rainfall. The north-easterly winds are strong and stormy and bring rough seas and wet weather, particularly to the eastern coast. The north-easterly winds blow from October to March. The south-westerly winds are less violent but they too bring fairly heavy amounts of rainfall to the western part of the country, despite the fact that Malaya lies in the partial rain shadow of the

Sumatran mountains. The south-westerlies normally blow from May to September. Between the periods of these winds, which because they come seasonally are known as monsoons, are periods of calm or variable winds. These are between April and May and September and October. At this season of the year heavy rain is also experienced from violent thunderstorms as the great cumulus clouds build up under convectional currents.

It is now clear that the rainfall of Malaya is influenced by two phenomena:

(i) The latitudinal position which encourages high humidity and the build-up of cumulus clouds with convectional rain.

(ii) Monsoonal winds, which gather their moisture over the South China sea and the Malacca Strait, as well as the Indian Ocean, and bring this to Malaya. Much of this rain is in fact relief (orographic) rain, for as the winds rise over the Malayan ranges the rain is dropped on the land.

Table 1.1. Rainfall at Selected Places of Malaya

Place	Location	Jan.	Feb.	Mar.	Apr.	May	Jun.
Alor Star	N.W.	1.6	1.2	5.3	10.6	8.6	7.5
Kota Bharu	N.E.	10.6	2.3	4.8	5.4	6.5	5.9
Cameron Highlands	Central	6.1	5.1	6.8	12.4	10.5	5.1
Kuala Lumpur	West	6.5	6.1	8.7	10.4	8.4	4.9
Singapore	South	9.9	6.8	7.5	7.6	6.9	6.7

Place	Location	July	Aug.	Sept.	Oct.	Nov.	Dec.
Alor Star	N.W.	6.6	10.6	10.2	13.8	8.3	6.3
Kota Bharu	N.E.	5.6	6.5	8.5	13.1	26.9	25.9
Cameron Highlands	Central	3.7	7.7	8.9	13.1	12.3	9.8
Kuala Lumpur	West	4.2	6.4	7.4	11.2	9.8	9.7
Singapore	South	6.7	7.9	7.0	8.1	10.0	10.2

Source: Malayan Meteorological Service.

Table 1.1 gives the rainfall figures in inches for five places in Malaya. By examining it we can pick out certain facts about the rainfall over parts of Malaya. Comparing the rainfall of Alor Star with that of Singapore, it is clear that in northern Malaya there is a distinct dry season, that is, two months with less than 2.4 inches of rainfall, whereas in the south there is no dry period at all and all months have a fairly substantial rainfall. In the north the wettest period is from August to October and it is wet again from April to May.

We may compare the western and eastern sides of Malaya by examining the figures for Kuala Lumpur and Kota Bharu respectively. The west has two short wet seasons corresponding with the times of the south-westerly and north-easterly monsoons. This is from October to December and from March to May; July is the driest month. On the east Kota Bharu has one long wet season from October to January corresponding with the north-easterly monsoon, and a very dry month in April.

The wettest part of Malaya is believed to be the Larut Hills of the Bintang Range (Fig. 8), where over 200 inches of rain are experienced. A large part of eastern Malaya near the eastern ranges has over 140 inches of rainfall. Similarly, the western slopes of the Malayan ranges towards the north have over 140 inches. Most of the western coast has less than 80 inches of rain in the year and most of the eastern coast has more than 100. Most of Singapore island has about 100 inches. The area in the rain shadow of the ranges in Negri Sembilan, that is near Kuala Pilah, has less than 60 inches of rainfall. (Fig. 8).

It has already been seen that a great deal of this rainfall is either convectional or orographic. In this connection it must be noted that most

of Malaya's rain is in the form of very heavy storms giving as much as 12 inches in one day. Those parts of Malaya with the heaviest rainfall are correspondingly those parts with the most extensive cover of cloud throughout the year. It will be seen that the mountain ranges and Singapore have cloudy skies for much of the year, whereas the north-west, the north-east and western coasts and the area around Kuala Pilah have a smaller amount of cloud cover.

Temperature. As this is an equatorial region the sun is overhead for a large part of the year and is always high in the sky. This means that throughout the year the temperatures will be more or less uniform, so that a small range of temperature is experienced. The temperature figures for the selected places in Malaya are given in Table 1.2. (^{o}F).

Table 1.2. Mean Temperature at Selected Places in Malaya

Station	Mean monthly Maximum		Mean monthly Minimum		Range	Annual mean
Alor Star	81.1	Apr./May	78.3	Dec.	2.8	79.8
Penang town	82.9	Mar./Apr.	80.7	Nov.	2.2	81.7
Kuala Lumpur	80.2	May	78.4	Nov./Dec.	1.8	79.2
Singapore	81.6	June	78.0	Jan.	3.6	80.0
Cameron Highlands	65.1	May	62.6	Jan.	2.5	63.7
Kota Bharu	81.2	May	77.4	Dec.	3.8	79.3

Source: Malayan Meteorological Service.

At Fraser's Hill, which is about 5,000 feet above sea level, the annual mean temperature falls to 66^{o}F whilst if at sea level in that area the temperature would be 80^{o}F.* This explains why the Fraser's Hill resort and the Cameron Highlands

* Temperature falls approximately 3°F for every 1,000 feet increase in altitude.

hill station are popular for those who like to rest from the high temperatures of the lowlands of Malaya.

At night, warm convection air currents rise above the land, which has been heated throughout the day, and cool sea breezes blow in. In southern Malaya from the direction of Sumatra, that is from the west, violent storms blow towards the coast. These usually occur at night time and bring very heavy rain and very strong winds which soon die away.

Constitutional development

Before we go on to any further discussion of the economic development of Malaya, it is important not only to have a general knowledge of the physical background, but a general knowledge of the historical background of the country. Although a detailed historical study of the country does not fall within the scope of this study; but a brief outline of the history and the constitutional progress since the British interest in the Far East began in the latter part of the 18th century, will help in an understanding of the economic development.

About one hundred and eighty years ago, the Malay Peninsula was sparsely populated, politically disunited, and economically undeveloped. It was covered almost entirely by dense tropical jungle and the inhabitants, no more than a quarter of a million, were Malays who lived in small settlements along the coasts and rivers.

Although this population had its race, its language and its Muslim religion in common, nevertheless there was no unity. The political organisation was one of small river states of varying degrees of independence and isolation. The north, in particular Kedah and Kelantan, came under the vague and fitfully exercised suzerainty of Siam. In the south, the sultanate of Rhian-Johore held a diminishing sway over what are now Johore and Pahang. The central

part of the peninsula, west of the main mountain range, was occupied by the three independent states of Perak, Selangor and Negri Sembilan. The pattern was feudalistic. Anarchy, strife and insecurity were commonplace. These circumstances remained unchanged until the British force came into being.

The British interest in the East Indies and the Far East was, like that of the Portuguese and Dutch, to begin with primarily commercial. In the second half of the eighteenth century the British East India Company was badly in need of bases for its trade with China, and an attempt to establish a station in the area was made in North Borneo. There the Sultan of Sula, who had been released from Spanish captivity when the British captured Manila in 1763, had ceded to the company the land from the Kimanis river to the Straits of Macassar.(14) (Fig. 1). This territory had earlier been given to the Sultan of Sulu by Brunei as a reward for services which he had rendered. The company opened a base at Balembangan (Fig. 1), an island to the north of Marudu Bay, but the place was unhealthy and constantly menaced by pirates. In 1775 it was pillaged by Sulus and Illanuns, who forced the garrison to retire. In 1803 an attempt to re-establish the base was made but again without success, and the station was closed together with a company factory at Brunei. After this no further British efforts at settlement in Borneo were made for 40 years.(15)

---

(14) See Winstedt, Sir R.O., "History of Malaya", Malayan Branch, Royal Asiatic Society, Singapore, 1935. See also
Hall, D.G.E., "A History of South-East Asia", Macmillan, London, 1955; and
Harrison, B., "A Short History of South-East Asia", Macmillan, London, 1954.

(15) Ibid.

In Malaya, British attempts to establish settlements were more successful. In 1786 Frances Light, on behalf of the East India Company, took possession of the island of Penang.(16) The island belonged to Kedah which at the time was anxious to obtain a guarantee of military assistance against Siam (its nominal suzerain), the Bugis and Burma.(17) The East India Company was unwilling to give such a guarantee but after 1791, when Kedah tried unsuccessfully to recapture Penang, it agreed to pay the Sultan of Kedah and his successors M$ 10,000 per year in return for the cession of Penang and, in addition, Province Wellesley.(18)

Malacca was surrendered to the British in 1795 during the Napoleonic Wars. It was subsequently returned on two occasions to the Dutch, who finally gave it up in exchange for Bencoolen in West Sumatra in 1825.(19) Meanwhile, the termination of the Napoleonic wars and the re-occupation of Java by Holland again faced the East India Company with the need for a good East India trading station.(20) The geographical position of Penang limited its value as a trading and naval base. The problem was solved by the foundation in 1819 of Singapore by Sir Stafford Raffles.(21)

---

(16) See Mills, L.A. "British Rule in Eastern Asia", Oxford University Press, 1942. See also Kennedy, J. "A History of Malaya. A.D.1400-1959. London: Macmillan, 1962.

(17) Ibid.

(18) See Stevens, F.G., "Early History of Prince of Wales Island (Penang)", ... a contribution to the Journal of the Malayan Branch, Royal Asiatic Society (JRASMB), Vol. 7, Pt.3, 1929.

(19) See Cowan, C.D. "Nineteenth-Century Malaya" Oxford University Press, 1961.

(20) See Mills, L.A. Op.cit.

(21) See Cowan, C.D., "Early Penang and the Rise of Singapore 1805-1832", JRASMB, Vol. 23, pt. 2, 1950. See also Coupland, R., Raffles of Singapore, Oxford University Press, London, 1946; and
Hahn, Emily, Raffles of Singapore, Aldor, London, 1948.

Raffles' "Malta of the East" more than justified his hopes. A year after its occupation the population numbered 10,000 and by 1823 the value of imports and exports in the free port exceeded 10 million dollars.(22)

The vision of Raffles, which greatly influenced the officials in Malaya who came after him, went far beyond the creation of a great entrepot at Singapore. He was anxious that Britain should "stretch a protecting hand over the East Archipelago and establish the amelioration and property of the inhabitants". He prohibited slavery and cruel sports and sought to promote the education of the people. The foundation stone of the Raffles Institution was laid by him in 1823. "Shall we not consider it one of our first duties", he had written to his superiors, "to afford the means of education to surrounding countries and thus render our stations not only the seats of commerce but of literature and the arts". His insistence that Singapore should be a port where "trade was open to ships and vessels of every nation free of duty, equally and alike to all" was for him not a more economic doctrine, expedient in his time, but an ethical reform aimed at establishing the freedom of Asians from the monopolies which for so long had confined their lives.

In 1826 Penang, Province Wellesley, Dindings*, Malacca and Singapore were combined to form the Colony of the Straits Settlements and continued to be administered from India. In 1830 they were brought under the control of the presidency of Bengal and 21 years later transferred to the direct control of the Governor-General of India.(23) In 1867 their administration became the responsibility of the Colonial Office.(24)

---

(22) See Mills, L.A. Op cit. See also Hall, D.G.E., Op. cit. (and Irwin, G., "Governor Couperus and the Surrender of Malacca. 1795", JRASMB, Vol. 29, pt. 3, 1956).

(23) See Tarling, N., "British Policy in the Malay Peninsula and Archipelago. 1824-1871", JRASMB, Vol. 30, pt. 3, 1957.

(24) Ibid.

* Dindings was retroceded to Perak in 1935.

For the first three-quarters of the 19th century it was the policy of the East India Company and of the British Government not to interfere in the Malay States of the Peninsula. During the period, however, significant changes began to take place in the peninsular Malay States. The Pax Britannica had removed the threat of external aggression and greatly increased trade in the area.(25) There was a considerable development of tin mining by immigrant Chinese workers, using new methods, and in consequence the control of the districts brought to the nobles greater revenue and power than attendance at the sultan's courts. At the same time the population grew and began to spread out over the countryside. Despite the economic progress the internal government of the Malay States remained far from good. There was constant warfare between them and civil war was frequent.(26) Piracy flourished and the people were burdened by service in the local wars of their rulers and by the system of slavery which was widespread. The situation was far from satisfactory to the increasingly prosperous commercial circles of Penang and Singapore. The transfer of the Straits Settlements to the Colonial Office enabled the Governor and leading merchants in the colony to represent the conditions in the Malay States more effectively to the British Government, with the result that in 1873 new instructions permitting a change of policy were issued to the Governor of the Straits Settlements.(27)

---

(25) See Hall, D.G.E., Op.cit., and Harrison, B., Op.cit.
See also Mills, "British Rule in Eastern Asia", p. 24.

(26) See Kennedy, J. "A History of Malaya. A.D.1400-1959", London, Macmillan, 1962. pp. 123-143.

(27) See Cowan, C.D. "Nineteenth-Century Malaya". Oxford University Press, 1961.

FIG 9 STATES OF MALAYA 1832 — 1942

(AFTER FISHER).

In the following year Britain became involved in the State of Perak, where large numbers of people were being killed in strife between Malays and Chinese and in feuds between rival Chinese secret societies in the tin fields of Larut.(28) The Governor succeeded in negotiating a treaty with the Ruler and Chiefs by which the advice of a British Resident should be asked and acted upon on all questions other than those touching Malay religion and custom. In 1874, also, the Sultan of Selangor, on the advice of the Chiefs, asked for a similar treaty and accepted a British Resident.(29) Similar arrangements were made later with Negri Sembilan and Pahang, and in 1895 these four States - Perak, Selangor, Negri Sembilan and Pahang - became a federation with a British Resident-General and a system of centralised government.* (Fig. 9)

Johore secured a treaty of protection in 1885, and in 1914, under a new treaty, a General Adviser was appointed.(30) By the Bangkok Treaty of 1909, Thailand transferred all rights of suzerainty, protection, administration and control of the four northern States of Kelantan, Trengganu, Perlis and Kedah to Britain.(31) Up to then, those States had continued to suffer from the weaknesses which had previously beset the States in the south. Although the provisions of the treaties negotiated with them and with Johore were similar to those of the earlier treaties, these northern States remained outside the Federation. (Fig. 9)

---

(28) See Comber, Leon, "Secret Societies in Malaya", Donald Moore, Singapore, 1957.

(29) See Parkinson, C. Northcote, "British Intervention in Malaya, 1867-1877". University of Malaya, 1960.

(30) See Winstedt, Sir R.O., "A History of Johore", JRASMB, Vol. 10, Pt.3, 1932.

(31) See Parkinson, C. Northcote. Op.cit. See also Hall, D.G.E., Op.Cit.

* See G.C. Allen and A.G. Donnithorne, "Western Enterprise in Indonesia and Malaya", p. 41.

In the development of the Residential system, Sir Hugh Low in Perak and Sir Frank Swettenham in Selangor and Perak (and later as Resident-General) showed great skill, and their wisdom and understanding helped to establish the new regime with the help of the Malay ruling class.(32) It should be noted that neither the federated Malay States nor Kedah, Perlis, Kelantan, Trenggenu and Johore were ever declared British territory, but an administrative link existed between the States and the British Straits Settlements, since the High Commissioner for the Malay States was also Governor of the Straits Settlements.

In the early decades of the establishment of British influence in Malaya, feudal anarchy, internecine wars and piracy were replaced by stable government. Efficient administrations, devoted to serving the needs of the people, were built up to meet the requirements of the expanding economies, the growth of which was now permitted by the establishment of peaceful conditions.

The commerce of the territories was vastly stimulated by the opening of the Suez Canal in 1869, by the introduction of the rubber tree from South America via the Royal Botanic Gardens at Kew in 1877 and by the rapid expansion of tin mining in the peninsula. These developments were accompanied by a great influx of Chinese and Indian labour. In Malaya, in the early years of the twentieth century, the construction of railways and roads went on at a rapid pace to allow the extension of rubber planting and tin mining to go forward unchecked.

---

(32) See Winstedt, Sir R.O. (with R.J. Wilkinson) "A History of Perak" JRASMB, Vol. 12, Pt. 1, 1934; "A History of Selangor", JRASMB, Vol. 12, Pt. 3, 1934; and "Britain and Malaya, 1786-1941", Longmans, Green and Co., London, 1944.
See also Cowan, C.D. (editor), "Sir Frank Swettenham's Perak Journals, 1874-1876", JRASMB, Vol. 24, Pt. 4, 1951; Swettenham, Sir Frank. "British Malaya", Allen & Unwin, 1948, and Sadka, Emily (editor), "The Journal of Sir Hugh Low, Perak, 1877", JRASMB, Vol. 27, Pt. 4, 1954.

The establishment of peace had permitted economic growth; the development of the economies in turn helped to provide the revenues which permitted the further development of the organs of modern government. Standards of administration were high and British officers were required to study Malay and to a lesser extent Chinese dialects and Indian languages and to learn about the customs of the people, in order that in the course of their work they could bring sympathy and understanding to bear on the problems of administration. The employment of Malays in government service had been government policy from the beginning, but in the early years of British administration there were few qualified for technical or clerical work. As a result the clerical services had to a considerable extent in the Straits Settlements and the federated States to be staffed by Indians, Ceylonese and Chinese who were English-educated, which state of affairs led to an increased use of English in government administration. At a higher level, however, the British administrative officers and, in particular, the Residents, were often masters of Malay and very often conducted their official duties in the language.

In the early years of British administration the local populations were not associated in government by means of any elected legislatures but every endeavour was made to govern the country in association with local leaders. In both the federated and unfederated Malay States the British Residents acted as advisers to the existing Rulers on all matters excepting those relating to Muslim law and Malay custom.

In the Straits Settlements, as early as the mid-nineteenth century, municipal committees had been established in Penang, Singapore and Malacca during the period of company rule. These organs enabled the leaders of all

committees to express their views to the government. Singapore became a municipality in 1856. Under Crown Colony government a Straits Settlements Legislative Council, consisting of eleven officials and six nominated unofficials, was established and recruitment to the civil service of the Settlements by competitive examination was initiated.(33)

In the years between 1918 and 1939 Malaya suffered, like most other countries, from the effects of the trade recession in the 'twenties and of the world economic depression of the 'thirties. Nevertheless considerable progress was made in expanding the public utilities and social services.

In the federated Malay States the largest items of government expenditure during the 'twenties were on the extension of railways and the construction of new roads and buildings. Medical and educational services were also expanded and other social services showed a moderate advance. The world economic depression forced the government to introduce sweeping economies and impose additional taxation. Construction of new public works was impeded and departmental expenditure cut, but with the recovery of revenue after 1934 services were again expanded.

Development in the unfederated Malay States also went ahead in the inter-war years. Johore, the largest and wealthiest, saw a considerable expansion of public works and social services. In Kedah, Perlis and Kelantan, much less revenue was available and the scale of development lower. Trengganu was still in the early stages of development during the period and the surplus revenues available for social services were small.(34)

---

(33) See Cowan, C.D. "Nineteenth-Century Malaya" Oxford University Press. 1961.

(34) See Sheppard, M.C., "A Short History of Trengganu", JRASMB, Vol. 22, Pt. 3, 1949.

The Straits Settlements Government embarked in 1919 on a programme of expansion. The Singapore Harbour Works were improved. Expenditure on medical services and education increased very considerably. After the depression progress was resumed, and by 1930 medical expenditure in the three municipalities was over M$ 5 million. The expansion of the naval base also affected the island's economy.(35)

During the inter-war years there were few people who thought in terms of achieving independence in the near future for any of the territories. For the most part the Malays were satisfied with a system of administrative tutelage which gave them opportunity and time to develop and which preserved the sovereignty of their traditional rulers. The immigrant races, though numerically important, to a large extent still thought in terms of a return to their homelands. The object of many of the Indian labourers who came to work in the Federation's plantations was to amass sufficient money to return in comparative affluence to India and they were not at all interested in the possibility of taking part in politics in Malaya. The immigrant Chinese on the other hand were beginning to be interested in politics but it was an interest in the politics of mainland China and not of Malaya.

After the Japanese invasion of China, the Chinese in Malaya increasingly gave support to the organisations seeking to aid, by financial or other means, the Chinese Government in its resistance. To the Chinese, therefore, the arrival of the Japanese in 1941 was part of a struggle in which they had been involved for a number of years.

---

(35) See Parkinson, C. Northcote, "Britain in the Far East: the Singapore Naval Base, Singapore", Ronald Moore, 1954.

During the Japanese occupation considerable thought had been given in the United Kingdom to the future form of government in Malaya. It was clear that the awakening of political consciousness would not permit the return to the forms of government which had existed before the War and that an effort would have to be made to establish constitutional arrangements which would provide for opportunities for development towards responsible self-government. A White Paper on the future administration of Malaya, published in 1946, stated that, "In this development all those who have made the country their homeland should have the opportunity of a due share in their country's political and cultural institutions".(36)

The British Government proposed that in Malaya the pre-war system of federated and unfederated Malay States should be replaced by a centralised Malayan Union which would deprive the Rulers and the States of all but nominal authority. Penang and Malacca would form part of the Union but Singapore, on account of its large entrepot trade and its special economic and social interests, would become a separate colony. Orders in Council constituting the Malayan Union and the Colony of Singapore came into operation on 1st April, 1946. While the Orders conferred constitutions on the territories and decreed the creation of Legislative, State and Settlement Councils, such councils were not to come into being until a later date, after full consultation with local opinion had been possible. In the meantime, in the Malayan Union and Singapore, nominated Advisory Councils were established to advise the Governor on legislation and other matters.

---

(36) See "British Dependencies in the Far East 1945-1949". Cmnd. 7709. HMSO.

Singapore became a separate colony but the proposals for the creation of a Malayan Union were never fully implemented, although the Union itself had a brief existence from 1946-48 after the end of the British Military Administration. In place of the Malayan Union a federal scheme was drawn up by a representative Malay working committee, and, after consultation with the non-Malay communities and the United Kingdom Government, there emerged the Federation of Malaya Agreement of 1948,(37) under which the States and Settlements were to retain their own individuality but were to be united under a strong central government. The Malay rulers remained sovereign in the Malay States and Penang, and Malacca remained British Territory. The Federation of Malaya agreement provided for a High Commissioner and a Federal Legislative Council.(38)

A considerable advance had already been made towards self-government with the introduction of the "Member" system in 1951. This was in effect the first step towards ministerial responsibility. Various departments and subjects were grouped under the supervision of individual members of the Legislative Council, most of whom were political and community leaders. In 1952 the composition of the Executive Council was changed to include all those in the Legislative Council who were "Members". The leaders of the various communities and politicians thus associated themselves with Government in the prosecution of the emergency and there is no doubt that the national effort and purpose which this association engendered did much to give the people a

---

(37) See Report of the Federation of Malaya Constitutional Commission, 1957. Colonial No. 330. HMSO.

(38) The Council consisting of 75 members, 50 of whom were unofficials, and considerable authority was left to the State and Settlement governments particularly where land administration was concerned.

feeling of being united as a single Malayan people. The ordeal of the emergency in a sense therefore contributed towards the development of Malayan national identity.

In 1955 a new constitution was introduced which transferred to the elected representatives of the people most of the responsibility for the government of the Federation. It was based on the recommendation of an almost entirely Malayan Committee appointed by the High Commissioner in 1953.

In March 1956 an independent Constitutional Commission headed by Lord Reid was appointed, and its report, on which the present Malayan constitution was ultimately based, was published in February 1957. The Legislative Council then accepted the constitutional proposals which had been finalised after consultation between the United Malay National Organisation, the Malayan Chinese Association, the Malayan Indian Congress and the British Government. The Federation of Malaya Agreement was signed on behalf of the Queen and the Malay Rulers in August 1957, and, at the end of the month, independence was finally achieved.

Singapore, after becoming a separate colony, was given a new constitution providing for it to be administered by a Governor with a nominated Executive Council and a partly elected Legislative Council.(39)

In 1952 a committee of unofficial Legislative Council members established by the Governor recommended the increase of territorially elected representatives to 18 and the complete review of Singapore's constitution. Such a

---

(39) The Legislative Council elected in 1948 consisted of the Governor as President, 6 members elected by territorial constituencies, 3 elected by the three Chambers of Commerce, 4 nominated unofficials, 5 officials and 4 ex officio members. After the 1951 elections the number of elected members was increased to 12 of whom 9 represented territorial seats.

review was carried out by a commission under the chairmanship of Sir George Rendel. All the Rendel Commission's recommendations were accepted by the British Government, a new constitution was brought into force and elections were held in April 1955.

The 1955 constitution took Singapore far on the road to self-government and gave the people a large measure of control over their own affairs.

In 1958 the State of Singapore Act was passed in the British Parliament providing for the establishment of the new State and enabling promulgation of the new constitution by Order-in-Council. Under it the legislature was to consist of one house - the Legislative Assembly - with 51 members elected from single member constituencies. There was a cabinet of nine members including the Prime Minister, drawn from the leadership of the majority party. Though external affairs and defence were reserved to the United Kingdom Government, the Singapore Government was given delegated authority to conduct matters concerning relations with other countries subject to safeguards in respect of Britain's international responsibilities.

The first elections under the new constitution were held at the end of May 1959 and resulted in an overwhelming victory for the People's Action Party led by Mr. Lee Kuan Yew, and achieved internal self-government on 3rd June, 1959, as the State of Singapore.

In 1963, both of the Borneo territories of Sarawak and North Borneo and the State of Singapore joined the Federation of Malaya and established a new nation of the Federation of Malaysia which was born on 16th September 1963. But, recently, Singapore has withdrawn from the Federation of Malaysia and become an independent sovereignty State on 9th August, 1965.

Chapter II

Historical Development

Malaya had been ruled by Britain since 1786. The original British interest in Malaya was trade. For this reason the island of Penang was rented on perpetual lease in 1786, the island of Singapore was bought in 1819, and the decayed seaport of Malacca was obtained by treaty from the Dutch in 1824. These three territories combined with Province Wellesley and the Dindings on the mainland to form the crown colony of the Straits Settlements, (Fig. 9). Between 1874 and 1909 the nine Malay States which had fallen into a condition of semianarchy and chronic misrule, were brought under British control.

Originally the British government did not intend to reduce the sultans to the position of figureheads. The resident was to carry out his policies through persuasion and not by giving orders. Before acting he was to secure the co-operation of the sultan and his council of Malay Rajas, and carry them with him in his reforms. During the first years of British rule this practice was followed, at least to some extent. It was feasible as long as change took place slowly, but it broke down when an economic and racial revolution began that transformed Malaya within about twenty years. Chinese and Indian immigrants poured into the territory in such numbers that eventually they outnumbered the Malays and altered the whole racial character of the peninsula. Simultaneously there was a heavy investment of British, and to a much less extent Chinese capital in tin and rubber. It was estimated that by 1914 the value of foreign, chiefly British, capital in Malaya was M$ 194,000,000.[1]

---

(1) See Allen and Donnithorne, "Western Enterprise in Indonesia and Malaya", p. 290.

In the 1880's Malaya was a museum piece of Asian feudalism, roughly similar to some European countries in the twelfth-century. The chief concerns of the governing class were war and piracy, and the peninsula was only remotely affected by events outside it. However, up to 1900 tin-mining was the mainstay of a rapidly expanding economy and the capital employed in this industry was almost entirely Chinese. The main British economic contribution was the construction of roads and railways to link the mines with the seaports.

By the 1900's Malaya had become inextricably involved in the economic life of the modern world. The state of the country was determined by the price of tin and rubber, and no longer by civil wars between rival claimants to a throne. From 1900 onwards there was a massive investment of British and other overseas capital both in tin-mining and in rubber planting which soon became the largest Malayan industry. In 1937, the total amount of foreign capital invested in Malaya was estimated to be M$ 454,500,000. Of this M$ 372,000,000 was in business enterprise, the British share being about M$ 260,000,000. Most of the remaining M$ 82,500,000 was made up of government loans, which were floated sometimes in Great Britain and at other times in Malaya. American investments were M$ 24,000,000, and the French, Dutch and Japanese were also represented. In addition to the above there was about M$ 200,000,000 of Chinese capital.(2)

The Malays had become an agricultural minority in the developed areas, and the peninsula was dominated by the British and Chinese. In a generation from the Middle Ages into the twentieth century, the Malays were unable to adapt themselves to the precipitate change, and their point of view continued

---

(2) Ibid., See also, Callis, H.G., "Foreign Capital in South-East Asia", New York, 1942.

to be feudal and conservative. They continued to be rice farmers and fishermen, as they had always been, and took no part in the economic transformation of the country.

Subsistence economy

Before the last quarter of 19th century, nearly all of the farmers were peasants of Malay stock, and all farming was largely for home consumption. The typical Malay farm consisted of a few acres of padiland and a mixed garden in which an assortment of dryland foodcrops, fruit and spices were cultivated. Although there was abundant land suitable for conversion into wet padifields the size of the peasant farm was limited by the area the farmer and his family were physically capable of handling, as well as by the fact that there was no incentive to grow more food than was sufficient for keeping alive.

The mixed garden formed a distinctive feature of the Malay peasant landscape, and was normally associated with wet padi cultivation and with some form of individual or family ownership of house and house site.(3) The typical mixed garden was made up of a close, jungle-like mixture of plants - annuals, shrubs, creepers and trees - intercultivated on the same piece of land at the same time. Occupying the ground level were the low shade-tolerant plants such as the elephant yam, arrow-root, taro and various vegetables; interspersed among these were taller plants such as the tapioca, banana, citrus fruit and sugar cane, while the top storey was made up of tall trees such as the coconut, mango, jack fruit, durian and numerous other fruit trees.(4)

---

(3) See Terra, G.J.A., "Mixed Garden Horticulture in Java", Malayan Journal of Tropical Geography Vol. 3 (1954), p. 33-43.

(4) See Pelzer, K.J., "Pioneer Settlement in the Asiatic Tropics", New York, 1945, p. 43-44.

The large-scale migration of Chinese to Malaya following the establishment of British rule in 1874 was responsible for adding a new component to the racial structure of the peasant population. While the original purpose of Chinese migration was to mine tin, later immigrants took to growing crops for both the local and export markets, in small farms as well as large plantations. Market-gardening was one of the more popular occupations of those Chinese who became agriculturalists.(5) Because vegetables do not keep fresh for long in the tropical climate, the market-gardens tended to be locally near their main markets, that is, near towns and villages. The Chinese farmers also cultivated pepper, gambier, clove, nutmeg, sugar cane, coffee, coconut and pineapple during the 19th century. But except for coconut and pineapple, none of these crops captured the lasting interest of the Chinese farmers, one after another failing because of plant diseases, distance from overseas markets and increased competition from other tropical countries. Interest shifted to rubber when it was introduced at the close of the century. The crop offered the greatest returns to invested capital, and it quickly became the premier crop among the Chinese, who grew it in smallholdings and in plantations. It remains the leading crop, in terms of total acreage, in the Chinese peasant farms today. Other crops grown by Chinese peasant farmers today are coconut, padi, pine-apple, food-crops and vegetables, some spices, fruit and a variety of other crops such as coffee and tobacco.

On the whole, the most important and in the past the least remunerative crop has been the rice cultivation. It is the staple food of 99 per cent of

---

(5) See Simpson, H.J. and Lau, Sing-Nam, "Chinese Market-Gardening", Malayan Agricultural Journal, Vol. 22 (1934). p. 119-124.

the population and has probably been cultivated in Malaya from the earliest settlement of the country. Fruit and vegetables are grown on far too small a scale to supply local needs; and the same inadequacy characterizes cattle, pig and poultry raising.

It can be said that during the last few decades, the peasant economy has made hardly any progress, though a certain amount of assistance has been given by the Department of Agriculture. Before the Second World War, one of the principal aims of the Department of Agriculture was to raise the Malay standard of living by making their farming more efficient, through research and by persuading the peasants to adopt the results of the investigations. Also, to make Malaya less dependent on imports for the bulk of its staple food of rice. But, until the late thirties, Malaya produced only 36 per cent of its requirements, though the acreage was considerably increased by the government's drainage and irrigation department. This was mainly due to the difficulty of carrying out Government policy. The Government decided to increase the research and field staff for peasant agriculture and to establish a Rubber Research Institute, so that the Department of Agriculture would be free to devote itself to other crops. It also determined to build irrigation works and form co-operative societies. But the policy was greatly retarded by the fall in revenue caused by the depression and the protracted discussions which prevented the Rubber Research Institute from getting under way until 1928. It was not until 1927, for example, that the Department of Agriculture was able to establish a Division of Soils for the systematic study and classification of different soils and the determination of their suitability for various crops. During the greater part of the 'twenties, moreover, the Director of Agriculture was a member of the administrative service and not a trained agriculturist.

On several occasions the rules governing promotion led to his replacement by a new Director so that the necessary continuity of policy was broken and time was lost while he learnt the needs of his department.(6)

Furthermore, a high though uncertain percentage of the Malay peasants were heavily in debt to their moneylenders or traders. Many lost their holdings to their creditors and became tenants. Often the debtor was compelled to sell his crop to the moneylender at less than the market price. The government tried to help by fostering the creation of Co-operative credit and marketing societies,(7) but with very limited success.

"Today, there are altogether about 800,000 peasants in Malaya,(8) of whom three-quarters are Malays and most of the remainder Chinese. The Indians and Pakistanis and the other minority groups make up only about 1 per cent of the peasantry. The Malays are distributed along the coastal-riverine locations on both sides of the Peninsula, with denser concentrations in the long-settled parts of the northeast and the northwest where padi cultivation dominates the pattern of agricultural activities. The Chinese peasant farmers are distributed mainly along the western Tin and Rubber Belt near the urban centres and ports which are the immediate markets for their crops."*

Besides the peasant farming, the subsistence economy also includes both coastal and freshwater fishing, and this is intimately associated with the traditional coastal and riverine pattern of Malay settlement.

---

(6) See Annual Report of the Department of Agriculture, S.S. and F.M.S. 1922, P.4; and 1927, P.12. See also D.H. Grist, "An Outline of Malayan Agriculture", pp. 31-33.

(7) The organization of the Co-operative Societies Department was established in 1921, and the first Co-operative Societies Ordinance was introduced in 1922. See also Chapter V. p. 259.

(8) See Federation of Malaya, "Census of Agriculture", Preliminary Report No. 1, 1960.

* See Ooi Jin-Bee, 'Some aspects of peasant farming in Malaya'.

Throughout Malaya, padi fields, rivers, ponds, lakes, catchment areas, freshwater swamps and abandoned mining pools are fished regularly by Malay peasants as well as Indian estate labourers. The single largest source of freshwater fish is the padi fields. In general, fish from the small and discontinuous fields characteristic of the south Malayan padi landscape are for subsistence only, and it is only in the large extended plains of north-west Malaya that there are substantial surpluses above subsistence needs. "Chinese participation in freshwater fishing is confined to carp-rearing in artifically constructed ponds. Fish culture here forms part of the Chinese market-gardening-cum-fish-rearing landscape. This form of pisciculture which had its origins in the warm temperate environment of South China was introduced successfully into the tropical setting of Malaya without substantial modifications. However, the average yield of carp is low, because most of the farmers rear carp only on a part-time basis, in conjunction with market gardening."*

The division between marine and freshwater fishing in Malaya is a sharp one: marine fishing is a self-contained industry providing full-time work for a large number of people, and is mainly established on a commercial scale, particularly of the Chinese operations; while fresh-water fishing is only a complementary facet of the Malay padi-growing economy and Chinese market-gardening.

The development of marine fishing in coastal waters around the peninsula is probably as old as settlement in the area. At present, most of the fishermen on the east coast are Malays, the only Chinese fishermen being at Johore. On the west coast the position is different as, though Chinese have a slight overall predominance, there are great concentrations of Chinese fishermen in

---

* See Ooi Jin-Bee, 'Land, People and Economy of Malaya', pp. 286 - 289.

the centre of Pulau Pangkor, Pulau Ketam and Malacca, while Malays predominate along the other parts of the coast.

Apart from this subsistence economy, "the economic activity is predominantly non-Malay and commercial. It in turn may be divided into two segments. The first of these is Asian, chiefly Chinese and partly Indians. It characteristically has been dual in its orientations. On the one hand it has been directed towards the primary production of rubber or tin, with both labour and enterpreneurial elements active in the whole. On the other hand it has been partly urban, commercial and trade-oriented. The second foreign segment has been European, chiefly British, but with other non-Asian nationalities represented. It has been almost entirely commercial and has developed through the primary exploitation of natural resources (rubber estate lands and tin-bearing formations) and the organization of commerce on a national and regional scale."*

As tin and rubber, and to a certain extent the entrepot trade, are the three main sources of the national income of Malaya, it is important to give an account of the evolution of the two industries and the early stages of development of entrepot trade.

Formation and location of tin-ore.

The part played by tin mining in the economic progress of Malaya was second in importance only to that of rubber planting. At various periods, gold, silver, tin, iron ore, coal oil, bauxite and several other minerals have been produced. But tin is of outstanding importance among the mining industries.

---

* See N. Ginsburg, 'Malaya', PP. 363–364.

The tin fields of the Malay Peninsula belong to the large metallogenetic province of South-East Asia, which includes Burma, Thailand, the Malay Peninsula and parts of Indonesia. This province is centred in Malaya and extends for hundreds of miles northwards into Thailand and lower Burma, and southwards to the islands of Singkep, Banka and Billiton, (Fig. 1). This is the richest and most extensive source of tin in the world, contributing for the last half century the bulk of the world's supply of the metal. Primary tin deposits always occur in, or near to, an acid igneous rock, usually granite or granitic rocks, although only a small fraction of the world's granite masses are stanniferous. For example, while the Main Range of Malaya is highly stanniferous, tin has not been found in the neighbouring granite range - the Benom.(9)

It is believed that the batholith of which the granite ranges of the Malay Peninsula are weathered remains was intruded during crustal movements in the Cretaceous period. As the magmas cooled and crystallized, cracks, fissures and faults were formed in the consolidated granites as well as in the adjacent sedimentary rocks. Highly mobile fluids, representing the last of the original magmas and containing cassiterite (tin-ore) among other minerals, found their way into these fissures and faults.(10) Primary tin deposits were formed when the fluids cooled and the tin minerals separated out from the other minerals, crystallizing usually into small grains which might be black, colourless, or different shades of brown, red, grey and yellow.(11) The most

---

(9) See Sir Lewis Fermor "Report upon the Mining Industry of Malaya"(Kuala Lumpur, 1939). See also J.B. Scrivenor "Notes on Prospecting for Tin-ore in the Federated Malay States" (Kuala Lumpur, 1911).

(10) See J.B. Scrivenor "The Origin of Tin Deposits" (Kuala Lumpur, 1909).

(11) See J.B. Scrivenor "The Deposits of Tin-ore in the Limestone of the Kinta Valley, Federated Malay States"(Kuala Lumpur, 1919).

common locations of these stanniferous veins were the margins of the granite masses, in the contact zone between the granite and the sedimentary rocks. There is therefore a close relationship between the distribution of the granite masses and the tin-fields of Malaya. None of the major tin deposits occur far from granite, but not all of the granites are tin-bearing.(12)

While the cassiterite mined in Malaya had its origin in the primary deposits that were genetically connected with the granites, the actual modes of occurrence of the mineral are varied.(13) Most of the tin-ore mined today occurs as secondary deposits in alluvial flats in the river valleys and coastal plains or as eluvial deposits on the slopes of hills.(14) Existing evidence points to the fact that during the Pleistocene age sea-level was several hundred feet lower than at present.(15) Fluvial erosion went on rapidly,

---

(12) See J.B. Scrivenor "The Geology of Malayan Ore-Deposits" (London, 1928). See also G.E. Greig, "Mining in Malaya", Malaya States Information Agency, (London, 1926).

(13) See W.R. Jones "Tinfields of the World" (London, 1925). also J.B. Scrivenor "The Origin of Tin Deposits" (Kuala Lumpur, 1909) and "Tin-fields of the Federated Malay States (London, N.D.).

(14) Eluvial deposits are those formed by the weathering and decomposition of stanniferous rocks and lodes in situ. No mechanical transport except soil creep is involved, so that the detrital deposits overlie the rocks from which they are derived. When such deposits are transported and re-deposited by water they become alluvial deposits. The same methods of mining are used for both types.

(15) See J.B. Scrivenor "The Geological History of Malaya", Quarterly Journal of the Geological Society, Vol. 69 (London, 1913).

stripping weathered material from the ridges and highlands and laying them down in the valleys and plains. In the process the rocks containing the primary tin deposits were also eroded away and subsequently laid down as alluvial material with a high percentage of cassiterite. Most of the alluvial tin of Malaya was deposited during the very long period of time between the Pleistocene and comparatively recent times.(16) The tin-bearing zone varies in depth from a few feet to over 100 feet, with some of the alluvium lying too deep to be mined economically by present-day methods.

Another type of secondary tin deposit is found where limestone containing veins and pipes of cassiterite adjoins granite. Such limestone commonly underlies the alluvium. Percolating ground-water easily dissolves the limestone, especially when it is fissured by fault planes, bedding planes and cleavage planes. The effect of solution is to hollow out and enlarge such fissures to form cups and cavities. Over a period of time deep solution troughs and innumerable pinnacles develop, with rich eluvial and sometimes alluvial tin-ore accumulating in the troughs.(17) The nature of the limestone surface poses a problem in the extraction of the ore, the only practical solution being gravel-pump mining using water pressure to flush out the hidden deposits.

---

(16) See J.B. Scrivenor "Alluvial and Lode Tin in Malaya", The Mining Journal, Vol. 78 (London, 1905).

(17) See R.A.F. Penrose "Tin deposits of the Malay Peninsula", Journal of Geology, Vol. 2 (1892). also W.R. Jones, "The Origin of the Secondary Stanniferous Deposits of the Kinta District, Perak, F.M.S., Quarterly Journal of the Geological Society, Vol. 72 (London, 1916).

FIG 10 LOCATION OF TIN FIELDS

BASED ON MALAYA LAND UTILIZATION MAP (NO. 29 – 1953).

An indication of the wide distribution of tin in Malaya is the fact that every one of the major geological formations is stanniferous to a greater or lesser extent. Tin mining takes place over a vertical range extending from well below sea-level to (at one time) heights of 4,000 feet, although there are now no highland mines. Scrivenor has divided the tin areas of Malaya into two zones - the western tin belt and the eastern tin-belt.[18]

The western tin belt lies along the flank of the Main Range and on either side of the subsidiary granite ranges west of the Main Range. The largest and most famous of the tin-fields along this belt is the Kinta Valley (Fig. 10). It has been estimated that about 45 per cent of Malaya's past production of tin has been derived from the Valley. Most of the rich alluvial deposits in the Valley occur along the valley margins close to the granite contact zone. The floor of the Valley is of limestone of Carboniferous age, and has been extensively metamorphosed by the granite of the Main and Kledang Ranges. Inter-bedded with the limestone are schists, phyllites, quartzites and indurated shales, all also metamorphosed by the granite, and occasionally carrying tin-ore.[19] The granite and the metamorphosed sedimentary rocks have been weathered and decomposed to considerable depths, and are the source of the tin-ore which is found as residual and eluvial deposits.

The second major area of mineralization occurs south of the Kinta Valley, mainly in Selangor and Negri Semibilan, and parts of South-western Pahang.

---

(18) See J.B. Scrivenor "Tin fields of the Federated Malay States" (London, N.D.)

(19) See J.B. Scrivenor "The Geology and Mining Industry of the Kinta District", Federated Malay States, (Kuala Lumpur 1913), and "The Deposits of Tin-ore in the Limestone of the Kinta Valley", Federated Malay States (Kuala Lumpur, 1914).

Here, primary and secondary tin deposits are scattered over an area nearly 90 miles long by 50 miles wide, covering the Main Range and its flanks. Most of the present-day production comes from alluvial deposits in Selangor.

Deposits are found in numerous other localities along the western tin-belt. The limestone caves of northern Perlis contain residual and alluvial deposits, now being mined by underground methods. Minor deposits of tin occur in shallow water along the sea coast of the Dindings area of Perak and in Malacca. These deposits extend beyond low-water mark, the ore being derived from local granitic rocks and concentrated by wave and tidal action.(20) In all, more than 90 per cent of the tin produced in Malaya comes from the western belt. Most of the surface mines and all of the dredges in the country are located there.

The eastern tin-belt is less continuous and less rich than the western. It includes the deposits in the eastern parts of Kelantan, Trengganu, Pahang and Johore (Fig. 10). "The richest field is in eastern Pahang, where primary deposits are mined by underground methods. This area of mineralization extends northwards for about 50 miles, covering part of southern Trengganu. Two extensive areas of mineralization occur in eastern Johore, one northwest of Kota Tinggi and the other south of Jemaluang. Minor deposits are also found in northern Trengganu and Kelantan".*

---

(20) See E.S. Willbourn "Notes on Tin Deposits in Malaya" F.M.S. Chamber of Mines Yearbook, 1940 (Kuala Lumpur, 1940).

* See Ooi Jin-Bee, Op. cit., pp. 295 - 299.

Evolution of tin mining

Malaya was famous for its export of tin long before the first rubber estate was planted. Tin was mined on a small scale hundreds of years ago, and in the earlier nineteenth century was the one important export of the Malay States. Only during the last fifty years has the enormous expansion of rubber-growing dethroned it from its place as the premier export. Over nine-tenths of the tin is from the Federated Malay States, particularly Perak, the remainder coming from the Unfederated Malay States, with the exception of about fifty tons from Malacca Territory.(21) Prior to the establishment of British control in the peninsula the export of tin was limited owing to the anarchic condition of the country and the obstacles raised by the Malay chiefs against Chinese development. Some of the mines were owned by Malay chiefs and worked by Chinese labourers in turn for a share of the proceeds; while others were owned and operated by the Chinese themselves. They entered Perak and Selangor in considerable numbers especially after about 1850 and developed the tin fields at Larut and around Kuala Lumpur.(22) The establishment of settled conditions induced some of the leading Chinese in the Colony to invest money in mining; and it was they and not Europeans who were the pioneers in developing the tin industry. The first European mines were opened in the early 'eighties, in the Kinta District of Perak. With a few exceptions however European investors refused to risk their money in Malayan tin; and it was not until about the end of the century that they began to take a prominent share in the industry.

---

(21) See Stokes, R., "Malay Tin-Fields" (Singapore, 1906).

(22) See Fermor, L.L., "Report upon the mining Industry of Malaya", (Kuala Lumpur, 1939).

The history of Malayan tin-mining is a story of how machines have replaced manual labour in those tasks. Up to the first quarter of the 19th century Malay miners worked surface deposits only and their output was small. Then came the immigrant Chinese miners in parties equipped and supplied for several months' digging and they were able to carry their open-cast mines down to depths of up to forty feet. To keep their mines dry they used an ingenious "chain pump" (working on the same principal as an escalator) driven by a water-wheel. This was the only mechanisation. The miners dug out the soil with hoes and it was carried up out of the mine by an endless procession of labourers, with baskets slung across their shoulders, trotting up improvised ladders of notched tree-trunks like a stream of ants.

Small steam engines and centrifugal pumps of European manufacture were introduced just before 1880. A few years later railway construction afforded cheaper transport to mines in the interior. The opening of the Kinta tin-field dates from this period. Towards the end of the 19th century the miners began to use a powerful jet of water to break down the soil at the working face of the mine (after which the resultant slurry is pumped up and the tin ore in it is separated out). This is the essential principle of the "gravel pump" which from that time has been the most common technique of Chinese mining.

Up to this point the Chinese were the dominant element in Malaya tin-mining. European mining had indeed begun as far back as the 1880's though with indifferent success in most cases. The Chinese quickly adopted European mechanical innovations and by skillful prospecting and economical management they made a success where the European companies failed. Malaya's annual output which had been about 6,000 tons in the "chain pump" period of

the 1860's rose to almost 50,000 tons after 1900.(23)

However, to maintain and increase this level of output it was becoming necessary to work deeper and less productive deposits. Such operations were uneconomic unless vast quantities of swampy soil could be worked at low cost. The solution to the problem was found in dredging. The first dredge arrived in Malaya in 1912 though owing to the 1914-18 war the main expansion of dredging came from 1920 onwards. The tin-dredge floats on a mining pool, which it excavates ahead and fills up behind in the course of dredging. Its working mechanism is an endless bucket chain scooping up soil through the water. Hence no problem of pumping out the mine to keep it dry arises.

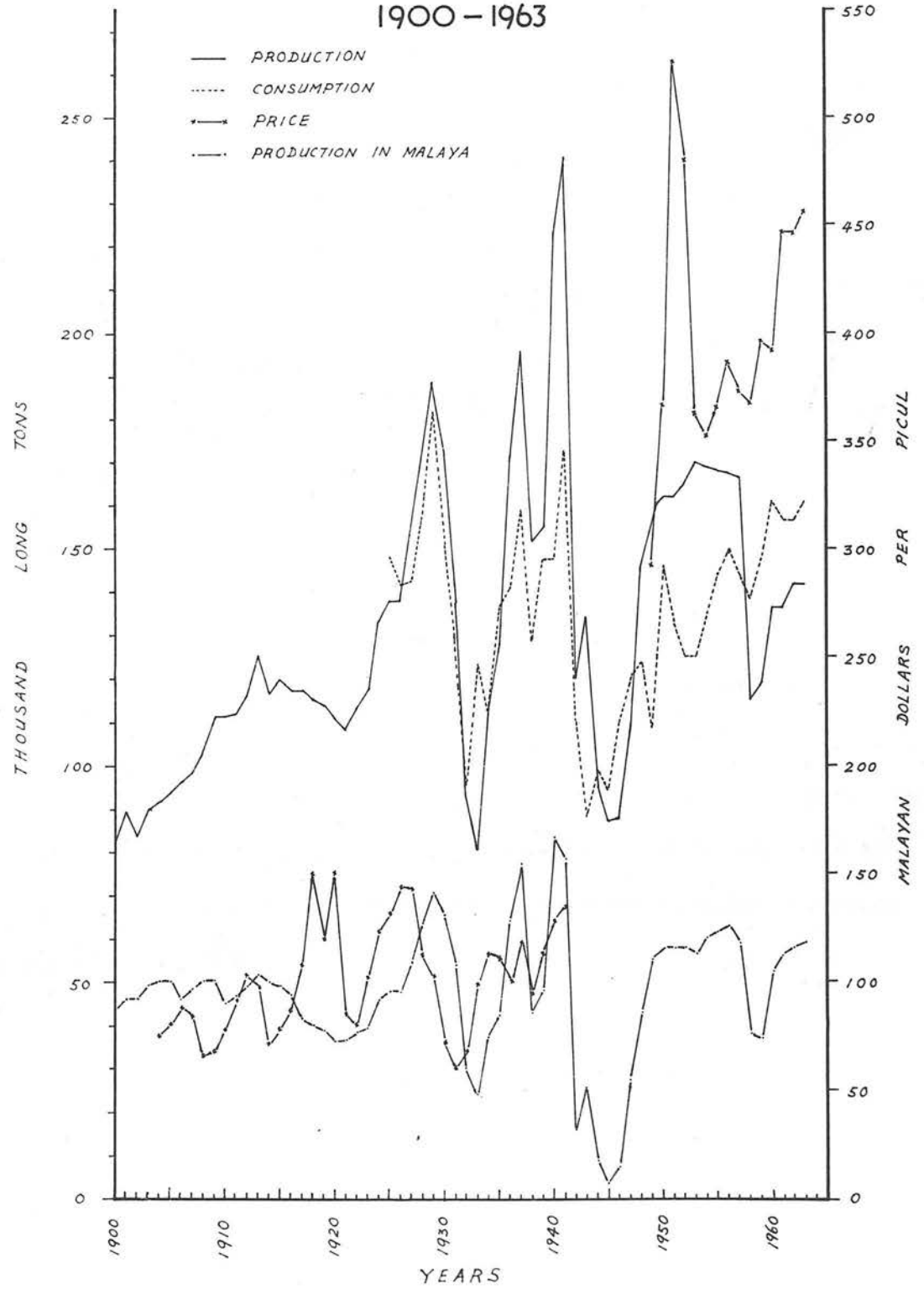
Tin-dredges are very expensive and a dredging property must be extensive and have a working life long enough for costs to be recovered as well as profits made. Depending on the grade of ground and the capacity of the dredge, the mining company must acquire sufficient land for mining operations to be carried on for a period of fifteen to twenty years to make dredging worth while. This was a larger concentration of capital than Chinese miners were accustomed to risk in a single venture. Hence dredging was financed by European joint stock companies. For technical reasons dredging and Chinese methods of mining can often be used to advantage in working the same tin-field though some deposits are only suitable for Chinese mines.

However, the inter-war years were a period of significant changes in the Malayan tin mining industry. The first half of this period saw the rapid introduction of western techniques of mining, principally the dredge, and the development of large-scale operations in tin mining which led to the rise

---

(23) See L.L. Fermor, "Report upon the Mining Industry of Malaya", (Kuala Lumpur, 1939).

FIG 11
WORLD POSITION OF TIN-IN-CONCENTRATES
1900 – 1963



SOURCE : BASED ON W. ROBERTSON, 'REPORT ON THE WORLD TIN POSITION' TABLE 1, TABLE 3, & TABLE 9.

of the European and the decline of the Chinese sector of the industry. The early 1930's saw a slump in the world tin industry, caused partly by a temporary fall in world demand as a result of the Great Depression but mainly by the vastly increased world production during the late 1920's. (Fig. 11). In Malaya the increased production had come chiefly from European-owned mines. As a result the average tin price in 1931 fell to one third of its level in the boom year of 1920. From 1931 further decline in the tin price was prevented by drastic export control among the principal producers in the world in the form of the International Tin Agreement. An artificial tin price was thus maintained until the outbreak of the Second World War." In effect, "the operation of the International Tin Agreement prevented the elimination of high cost producers like Bolivia and worked generally to the disadvantage of Malaya, a low cost producer."(24)

"Malaya came under the Japanese occupation between 1942 and 1945. Despite severe disruptions to the tin mining industry under the Japanese occupation the recovery of tin production in Malaya in the immediate post-war years was remarkable. By 1948 production had almost reached the 1939 level and by 1956, in spite of serious disturbances under the emergency which came into force in mid-1948, the industry returned to its pre-control productive capacity of the late 1920's." (Fig. 11).

"To some extent, the rapid progress of the industry in the post-war years was the result of the financial assistance offered by the Malayan government for the rehabilitation of the mines immediately after the war. But more important was the encouragement given to the industry in the form of a

---

(24) See Yip Yat Hoong, "Malaya under the pre-war International Tin Agreement", (Malayan Economic Review, Vol. VIII, No. 1. April 1963).

continuous high tin price which culminated in the Korean War boom of 1951-2. In 1949 the average tin price was about twice that of 1941 and about four times that of 1931. During 1951-2 this was more than four times that of 1941 and eight times that of 1931. (Fig. 11). No doubt production costs during the years after the war had risen considerably in all the producing countries. But in Malaya the post-war tin price, especially during 1951-2, still left a wide enough margin of profit to encourage the rapid introduction of new productive capacity in the industry."

"An important influence on the post-war world tin market has been the United States strategic stockpiling policy. The United States, which has no tin resources of its own, began stockpiling tin for strategic purposes in 1939 but continued with the policy even after the war. As early as the end of 1947 the post-war recovery of tin production in Malaya (and also in Indonesia) had been so rapid that world production had caught up with world commercial consumption. During the following years 1948-55, there was a continuous substantial excess of production over commercial consumption, and it was chiefly the heavy buying of the United States for its strategic stockpile during this period which removed this substantial excess from the world market and maintained a high price of tin throughout this period."

"After 1956, the United States reduced substantially its strategic stockpile purchase of tin. But even before that it had become clear that the high post-war tin price was only temporary. As soon as the United States had achieved its stockpile target a world tin surplus similar to that of the 1930's would emerge. Consequently in 1956, the International Tin Agreement was revived in an attempt to maintain the high tin price artificially, if necessary by export control. The scheme was successful in keeping the

average tin price above M$ 380 per picul throughout 1956-60, but in the process export control was introduced between late 1957 and 1960. As a result between 1956 and 1958-9, world production fell by nearly 25 per cent. In Malaya the effects of export control were more serious. Between 1956 and 1958-9, production fell by about 40 per cent, employment by more than one third, the export duty on tin by nearly one half and about 40 per cent of the mines were put out of operation." * Although its relative importance to the Malayan economy has declined considerably in the last fifty years as a result of the country's general development, in absolute amount its contribution to government revenue and to the gross national product remain substantial.

Growth of rubber planting in Malaya.

The earliest forms of plantation agriculture in Malaya were the cultivation of spices and gambier on Penang and Singapore Islands and the adjacent mainland. Pepper was the most important crop; but by the middle of the nineteenth century exports had become unimportant. Penang had valuable plantations of cloves and nutmegs until 1860 when plant diseases almost destroyed them. Meanwhile sugar growing had been introduced in Penang and Province Wellesley in the 'thirties and became important about 1860. It held a position of importance for about forty years but was finally abandoned owing to the greater profits to be made in rubber. It was never a highly profitable industry and received its first setback in 1906 - the time of the first rubber boom, and by 1910 it was doomed. They decided to abandon it in 1911, but grew it as a catch crop with rubber until 1913, when the last sugar refinery ceased operating.(25) Coffee cultivation was begun

---

(25) See D.H. Grist, "An Outline of Malayan Agriculture" 2nd ed. (London, 1950).

* See Yap Yat Hoong, 'The Mining Industry' in Wang GungWu, 'Malaysia'.

about 1875 in Perak and Selangor and showed that there were other products in the Federated Malay States besides tin and gold. Previously there had been few planters in Malaya, but its success attracted many from Ceylon where the coffee industry was being destroyed by a blight. The export reached its maximum in 1905, but the cultivation was ruined by a combination of plant disease and wild fluctuations in price. The failure of coffee roughly coincided with the success of rubber and the great majority of planters substituted the latter.(26) In 1934 coffee was cultivated on about 17,528 acres, largely by Chinese and Malay small holders, and usually interplanted with some other crop.(27)

The introduction of rubber took place in 1877 when two cases of seedlings from the Royal Botanic Gardens at Kew were sent to the Botanic Gardens at Singapore. Later, twenty-two seedlings of Hevea were brought to Malaya by Henry Nicolas Ridley in 1888. These were planted in the grounds of Sir Hugh Low's Residency at Kuala Kangsar.(28) They formed part of the consignment which Sir Henry Wickham had brought back with him from his mission to Brazil, which at that time was the principal source of supply.

In 1882, Sir Hugh Low reported that seeds and plants from the trees in the Residency gardens had been distributed to Java, Singapore, Ceylon and India. Government nurseries were established and the seedlings offered to Malayan planters without much success. They were interested in the established

---

(26) See K.P. Ang, "The Rubber Industry in Malaya" p. 10.

(27) See D.H. Grist, "An Outline of Malayan Agriculture", (London, 1950).

(28) See K.P. Ang, Op.Cit. p.6.

cultivations; but a few trees were planted by District Officers to assist the Department of Agriculture in its experiments. Between 1896 and 1899 some of the estates began to interplant with rubber as the price of coffee fell and caterpillars also attacked the trees. By 1897 only 345 acres were under rubber; but the pioneers had proved the suitability of the soil and climate and the proximity of India and China ensured abundant supplies of cheap and efficient labour.(29)

By 1905 the rubber acreage had grown to about 50,000 and the export was 105 tons. At the same date the world production of wild rubber was 62,000 tons of which over half came from South America and the remainder from Central Africa and other tropical countries.(30) For a large percentage of the Malayan rubber acreage was composed of trees which had not yet attained the tapping age of 6-7 years. After 1905, as more trees reached maturity, there was a corresponding increase in rubber output from the Malayan Plantations.

Planting was further stimulated partly by the development of the motor-car, which immensely increased the demand for rubber, and partly by a well-engineered Brazilian coup in 1905 and 1906 which took advantage of the growing demand to force up the price from about M$ 0.86 to over M$ 2.50 per pound and to a record of nearly M$ 5.50 per pound in 1910. Immense profits were realized by the existing plantations during the boom of 1910-12 and a very large number of new rubber companies were floated in London. By 1914 the output of plantation exceeded that of wild rubber, since systemized production with settled labour conditions proved the more economical. Malayan plantations

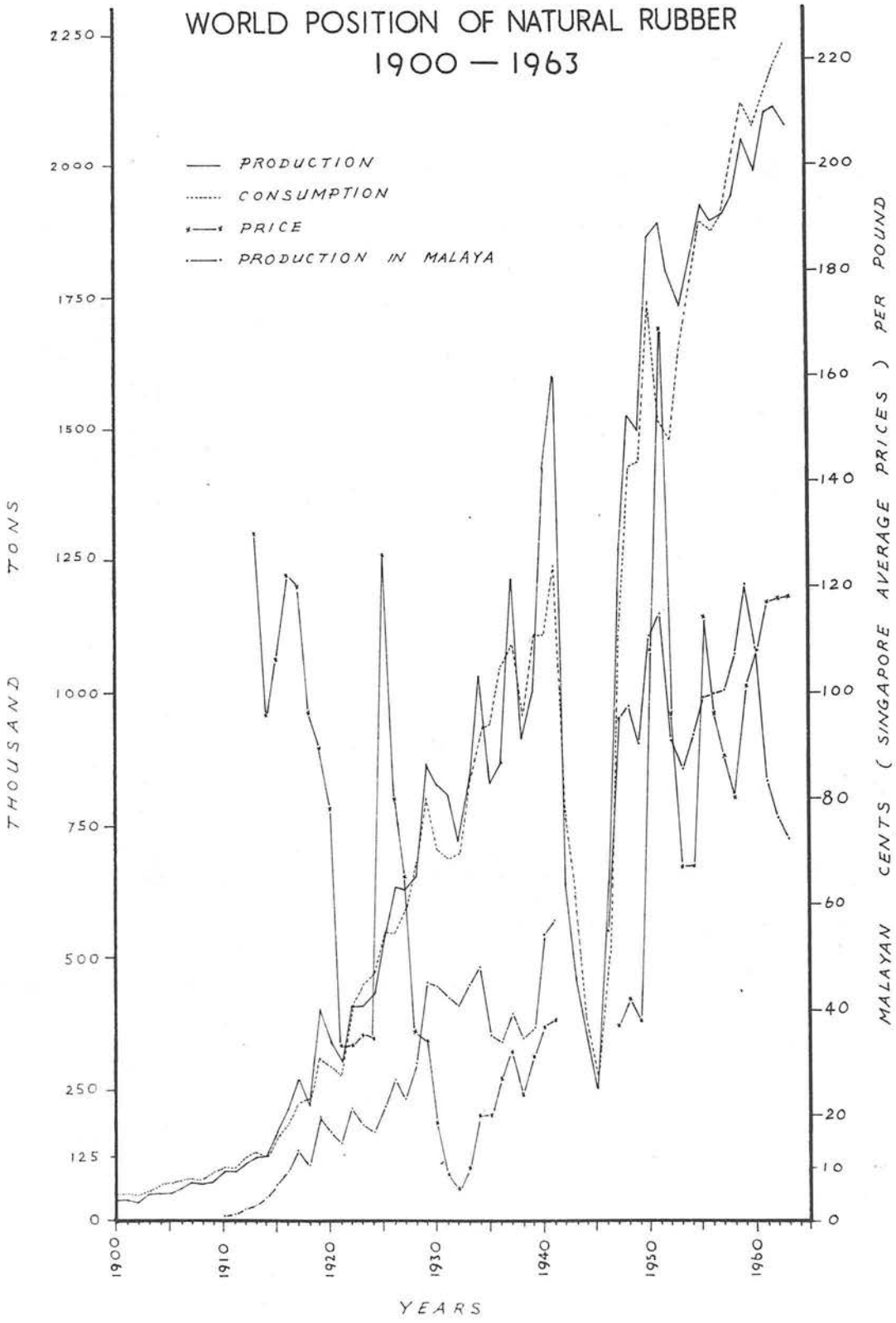
---

(29) See O. Marks, "The Pioneers of Para Rubber Planting in British Malaya", in British Malaya, Vol. I. pp. 281-292.

(30) See K.P. Ang, Op.Cit., p.7.

FIG 12

WORLD POSITION OF NATURAL RUBBER 1900 — 1963



SOURCE : RUBBER STATISTICAL BULLETIN, Vol. 19, No. 10, JULY. 1965 TABLE 55, EXCEPT MALAYAN FIGURES WHICH ARE BASED ON SIR ANDREW McFADYEAN ed., 'THE HISTORY OF RUBBER REGULATION 1934-1943' TABLE 3, AND 'MALAYA RUBBER STATISTICS HANDBOOK,' 1962 & 1963, TABLE I (a).

could deliver rubber in New York for less than it cost to collect and ship wild rubber from the Amazon. Moreover the plantations could assure a regular supply while the collectors of wild rubber could not. Land was available on easy terms and until the slump of 1920 cultivation was extended more or less uniformly each year by Europeans and Chinese. The Malays were increasingly attracted to rubber and showed an appreciable tendency to substitute it for the traditional but far less profitable padi and fruit. By 1919 the export of rubber was 196,000 tons or about 53 per cent of the total world production. (Fig. 12).

The first setback to the industry came in the years 1920 to 1922 when prices dropped to depression levels, averaging M$ 0.33 per pound in 1921 and 1922. The slump was due to over-production, aggravated by the post-war depression and by extravagant methods of cultivation.

During the 1920's and 1930's the industry was forced by the condition of the world market to restrict production, and there was a period of general retrenchment. One of the important effects of this retrenchment was the diminution of the small-holders' production, as compared with the estates.(31) (Fig. 13). The rubber small-holders were generally accorded an inequitable share of the total rubber production under the various restriction schemes.(32)

---

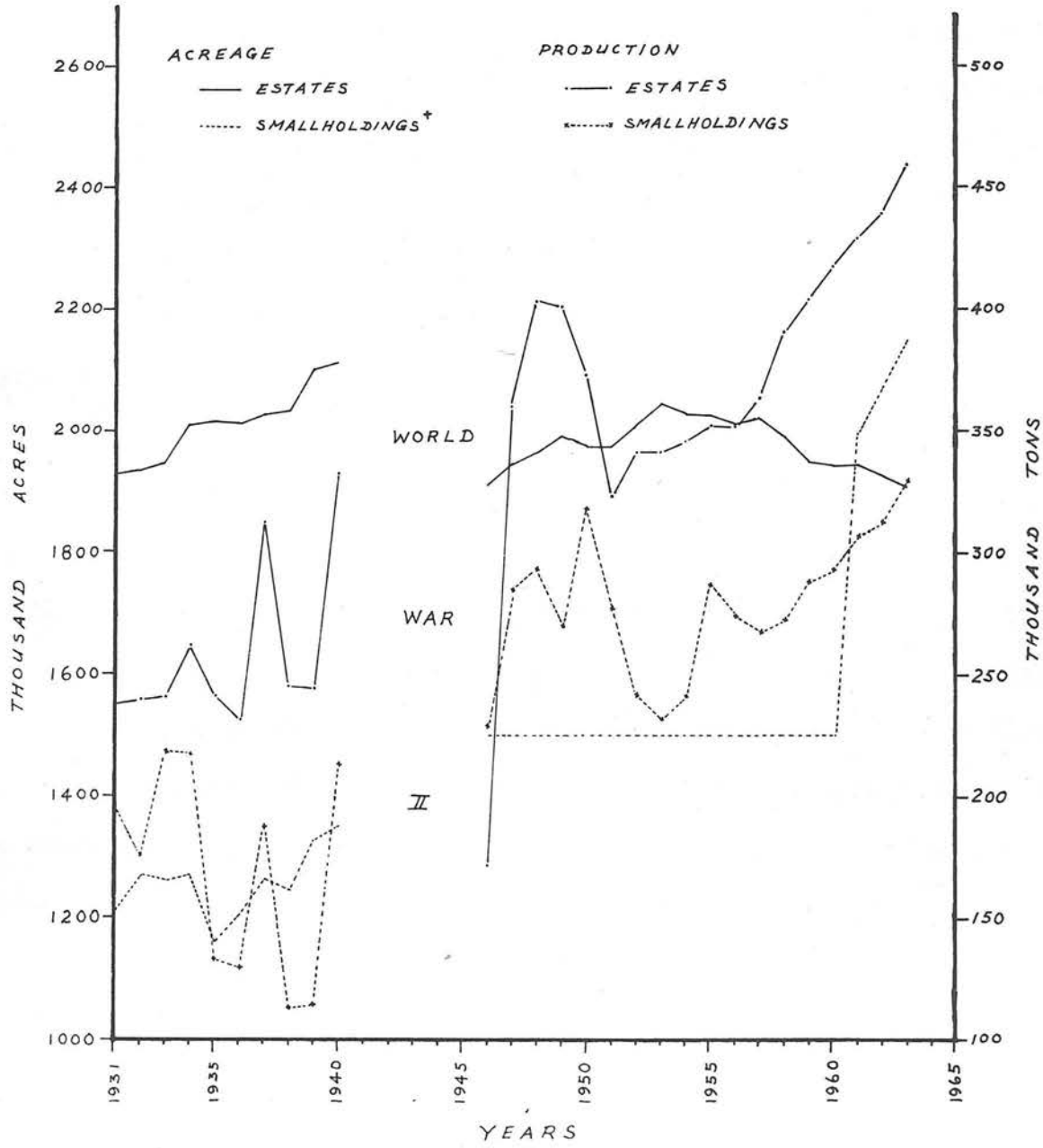
(31) An estate is defined as "an area aggregating more than 100 acres, planted with rubber or on which the planting of rubber is permitted, and under a single legal ownership".

(32) There had been, prior to the International Rubber Regulation Agreement, several schemes, both national and international, to adjust rubber supplies to demand. Some of these schemes were never put into practice at all, and of the others the only one of any real significance was the Stevenson Scheme, which operated from 1st November, 1922, until 1st November, 1928. Under the International Rubber Regulation Agreement, no new planting was permitted from 1st June, 1934 to 31st December, 1938 with the exception of experimental planting on new land. From 1939 onwards limited new planting was permitted on a basis of 5 per cent of planted area. No restriction was placed on new planting after the Second World War.

FIG 13

ACREAGE AND PRODUCTION OF MALAYAN RUBBER

1931 — 1963



† : NO ACCURATE FIGURES OF SMALLHOLDING ACREAGES ARE AVAILABLE FOR POST WAR YEARS UNTIL 1960. 1½ MILLION ACRES IS AN ESTIMATE ONLY.

SOURCE : BASED ON ANNUAL REPORT OF THE SINGAPORE CHAMBER OF COMMERCE RUBBER ASSOCIATION, 1963; AND MALAYA RUBBER STATISTICS HANDBOOK, 1963. TABLE 6 & TABLE 19.

In the same period, between the 1924 Stevenson restriction scheme and the outbreak of World War II, the small-holders of the Netherlands East Indies were permitted to expand their acreages to such a degree that Malaya was displaced by Indonesia in the production of rubber soon after the War.

However, soon after the end of the Stevenson restriction scheme, rubber production increased greatly and surplus stocks began to accumulate as more and more rubber came into the market than could be consumed. (Fig. 12).

In spite of the great depression, the rubber acreage increased from 2,945,000 acres in 1929 to 3,464,000 acres in 1940 in Malaya, of which 2,113,000 acres were in estates and 1,351,000 acres in smallholdings. The increase in planted area was due to new planting on land already alienated but not yet planted with rubber. Such land had been held either in reserve and unplanted, or for the cultivation of other crops.

The total area under rubber in Malaya has not increased to any great extent since 1941. From 1946 to 1957, the total area increased by about 322,000 acres mainly due to new planting by estates rather than by smallholders. The planted area in 1957 was approximately 3,730,000 acres, of which slightly more than 2,020,000 acres were in estates and 1,710,000 acres in smallholdings. The total acreage planting by estates has since fallen to about 1,925,000 acres in 1963, less than the acreage which had been planted in 1931. (Fig. 13). This was due partly to selling their holdings to smallholders by some estates and partly to replanting of high yielding clones in the estates. Whilst the total acreage in smallholders was increasing to 2,145,000 in 1963, nearly more than double in 1931, (Fig. 13) due mainly to new planting in the small-holdings area.

Research has played an important part in aiding the rubber planting industry of Malaya throughout its growth from the few hundred acres which existed at the end of last century to more than 4 million acres which it covers today. Following the early investigations of Ridley and others at the Singapore Botanic Gardens, research was continued by the Department of Agriculture of the Federated Malay States from 1900 until 1926 when the Rubber Research Institute of Malaya (R.R.I.M.) was founded to take over the work.

The broad aims of the research have always been firstly, increased efficiency and reduced costs of production and, secondly, improvement in the uniformity and quality of the product; the latter including the development of new types of rubber possessing superior properties. Progress towards the first objective comes mainly from research into the cultivation of the tree and the harvesting of the crop. The second objective is to achieve a better understanding of the nature of the rubber hydrocarbon and of the non-rubbers in the latex and of how to produce better rubbers from this raw product. A third objective is to find means of improving the efficiency of current estate factory processes.

Since its foundation, the Institute has made considerable contributions to the improvement of rubber production. Yields have been greatly increased by selective breeding; better tapping systems have been devised and the introduction of yield stimulation has given increases, which range from 20 to 50 per cent. Control of root diseases has been improved. Advances also been made in soil management, manuring, propagation, planting methods, in the improvement and standardisation of methods of processing and in the production of superior processing rubbers.

The success of breeding work, to which the botanists of the R.R.I.M. have made a notable contribution, can be judged from the fact that clones now recommended for large scale planting yield from 1,500 to 2,500 lb. of rubber per acre per annum as compared with the 350 lb. average for unselected seedlings.(33) Recently, special importance has been attached to speed and vigour of growth since if the tree matures rapidly and can be tapped earlier, overall costs are reduced. At the same time, it is reported that an experimental planting of the R.R.I.M. shows that more than 3,000 lb. of rubber per acre - about eight times the annual output that is obtained from the first rubber trees planted there at the start of the century.(34)

Environmental factors in the location of Rubber.

The reasons which affect the growth and rapid expansion of rubber planting industry in Malaya were due to the human factors as we have mentioned above, but the natural environment has also played an important role.

In general, Hevea Brasiliensis, grows best in regions having 100 or more inches of rain annually and not less than 2 or 3 inches in any one month. Where the rubber grows best the temperature is uniformly high, 25°C or more, with no month having less than 20°C. Land that slopes gently is essential, for it prevents waterlogging and erosion of soils.

By temperature limitations the culture of Hevea is restricted to a belt extending some 20° to 25° North and South of the Equator. However, only a small proportion of the land areas included in this broad belt is suitable for rubber cultivation.

---

(33) See K.P. Ang, Op.Cit. pp. 47-48.

(34) See "Natural Rubber News" February, 1964.

Nowadays, the major portion of the world's natural rubber is produced in Malaysia, Indonesia, Thailand, Ceylon, Burma and Southern part of Indochina. The production of more than nine-tenths of the world's natural rubber in these areas can be readily explained - geographic factors are significant, but are by no means the only ones; political and economic conditions also play important roles in the development of the industry.

Environmental conditions in the rubber areas of South-East Asia are excellent for the growth of the rubber tree. On low coastal plains and low rolling hills large areas of land may be obtained cheaply. The deep clay loam, loose and well-drained, allows taproots to grow 10 feet deep. Rubber areas have high temperatures the year round and an annual rainfall of from 70 to 120 inches with no month receiving less than 3 inches.

In Malaya, as far as climatic conditions are concerned, the tree will thrive in any part of the Peninsula below an elevation of about 1,000 feet; its growth becomes stunted at elevations above 1,500 feet. It is also limited by steep-sided hills in the interior, by mangrove or established padi on the coast and by inaccessibility in the remaining area.(35)

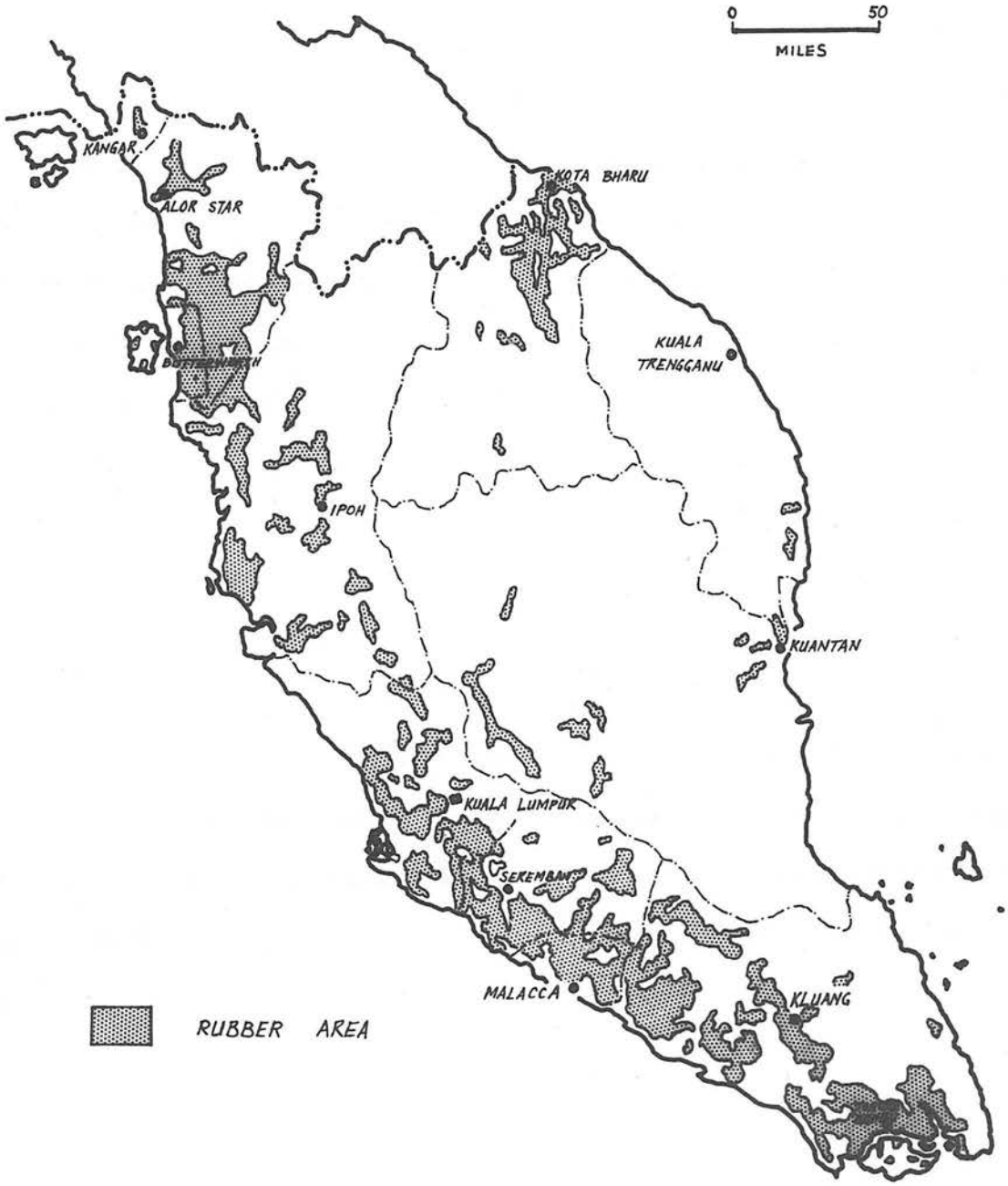
Though it is undemanding in its soil requirements, it grows best in soils which are friable, deep, well-oxidized and acid in reaction (PH 4.0 to 6.5)*. The value of the alluvial soils, most of which contain large amounts of impervious clay, depends on adequate drainage.

---

(35) See P.R. Wycherley, "Variation in the Performance of Hevea in Malaya" in Journal of Tropical Geography, Vol. 17. May 1963, p. 143.

* See "Planter Bulletin" No. 37, (1958), and No. 62 (1962).

FIG 14
LOCATION OF RUBBER PLANTING



BASED ON MALAYA LAND UTILIZATION MAP (No. 29 - 1953).

The best sites are undulating land with good natural drainage, but flat swampy areas can be converted into good rubber land by an efficient drainage system.

In such circumstances, the rubber planting is concentrated in Western Malaya from Kedah in the north to Johore in the south. (Fig. 14). The zone sometimes referred to as the tin and rubber belt, varies in width from 5 to 40 miles and covers the coastal plain, inland fresh water swamps and foothills up to an altitude of about 500 feet. The earliest rubber holdings were developed on the drier sites of the undulating lowlands and the slopes of the foothills. But the great demand for rubber soon led to the reclamation of extensive areas of swamp land.

The natural conditions of climate and soil were found to be well suited for the growth of Hevea, especially along the well-drained gentle slopes of the foothills on both sides of the mountainous backbone of the Peninsula, and the undulating land of Southern Malaya. But the special attraction of Western Malaya from the rubber planters' viewpoint was provided by the skeleton network of roads and railways already laid out to serve the tin mining industry of the western foothills. Another factor which attracted the planters to the west was the early establishment of political stability in the tin-rich states of Perak, Selangor, and Negri Sembilan. All these influences have worked to establish the greatest concentration of rubber in the west.

Entrepot trade

In terms of gross value, about half of all the trade of Malaya is entrepot trade. About 90 per cent of this trade is conducted in Singapore, and very nearly all the remainder in Penang. Its concentration in Singapore had its

origins partly in the accidents of history and partly in the facts of geography.

Since 1786, Penang was the first of the three Settlements to come under British rule; but it failed to fulfil the expectation of the East India Company that it would attract to itself a large part of the trade of the Dutch Colonies. The port lay on the western edge of the East Indian Islands, and moreover the Straits of Malacca swarmed with pirates who inflicted heavy losses upon the small and poorly armed boats of the native traders. The majority therefore stopped at Rhiau or Malacca, and only a comparatively small number made the long and dangerous voyage to Penang. Apart from them and a small but important trade with Siam and China, the bulk of Penang's commerce was with Burma and the Malay states of Northern Sumatra and the west coast of the Malay Peninsula.

Malacca, the traditional trade centre of the Straits, suffered severely because the establishment of Penang deprived it of its trade to the westward. Furthermore, Malacca's harbour was rapidly silting, and the foundation of Singapore in 1819, 120 miles to the south east deprived it of its commerce with the Archipelago and with China. Thenceforward its trade was confined to the adjacent states of the Malay Peninsula and Sumatra, and Malacca became little more than a depot where the produce of the neighbouring countries was collected for transmission to Penang and above all Singapore.

To some extent Penang also became a commercial dependency of Singapore: a large part of its imports from Great Britain and India did not come to it directly but were transshipped from there. Much also of the local produce which it collected was not sent directly to its destination but was forwarded to Singapore. Singapore from the date of its establishment in 1819 rose

rapidly to the predominant position which it has held ever since. By about 1822 it had already captured the bulk of Penang's trade except with the adjacent countries of Burma, Northern Sumatra and the west coast of the Malay Peninsula.

Singapore was the centre of British trade in the area which extended from Sumatra to New Guinea and from Java to China. It attracted to itself a large part of the commerce of the Netherlands East Indies, it had a very important trade with China, and it also had valuable markets in Siam, Indo-China, and the Philippines. During the greater part of the nineteenth century its trade with the undeveloped Malay Peninsula was insignificant and Singapore relied entirely upon its foreign entrepot trade. The principal imports from Great Britain were cotton and woollen piece goods, iron and other manufactures. India supplied opium, one of the most important exports, particularly for the China trade, and textiles. Singapore and Penang redistributed British and Indian manufactures throughout South Eastern Asia and collected its products for shipment to Europe. The East Indian Islands and the Malay Peninsula provided Straits produce, such as pepper and other spices, gambier, tin, rattans, beeswax, damar and other gums. From China came tea, silks, and cassia in exchange for opium, Straits produce and British textiles. Siam and Indo-China supplied sugar, rice, ivory, and salt.(36)

Gradually, the trade area centering in the Straits Settlements has diminished. The first loss was the China trade which was transferred to Hong Kong after its establishment in 1842. Following this, a large part of

---

(36) See L.A. Mills, "British Malaya, 1824-67", pp. 185-198.

the trade of Indo-China was cut off after the French conquest as the result of the heavy duties imposed upon foreign imports and the establishment of direct services between the colony and France. In the Netherlands East Indies, Macassar (Fig. 1) was made a free port in 1847, and so diverted to itself much of the trade from Celebes and adjacent islands.(37)

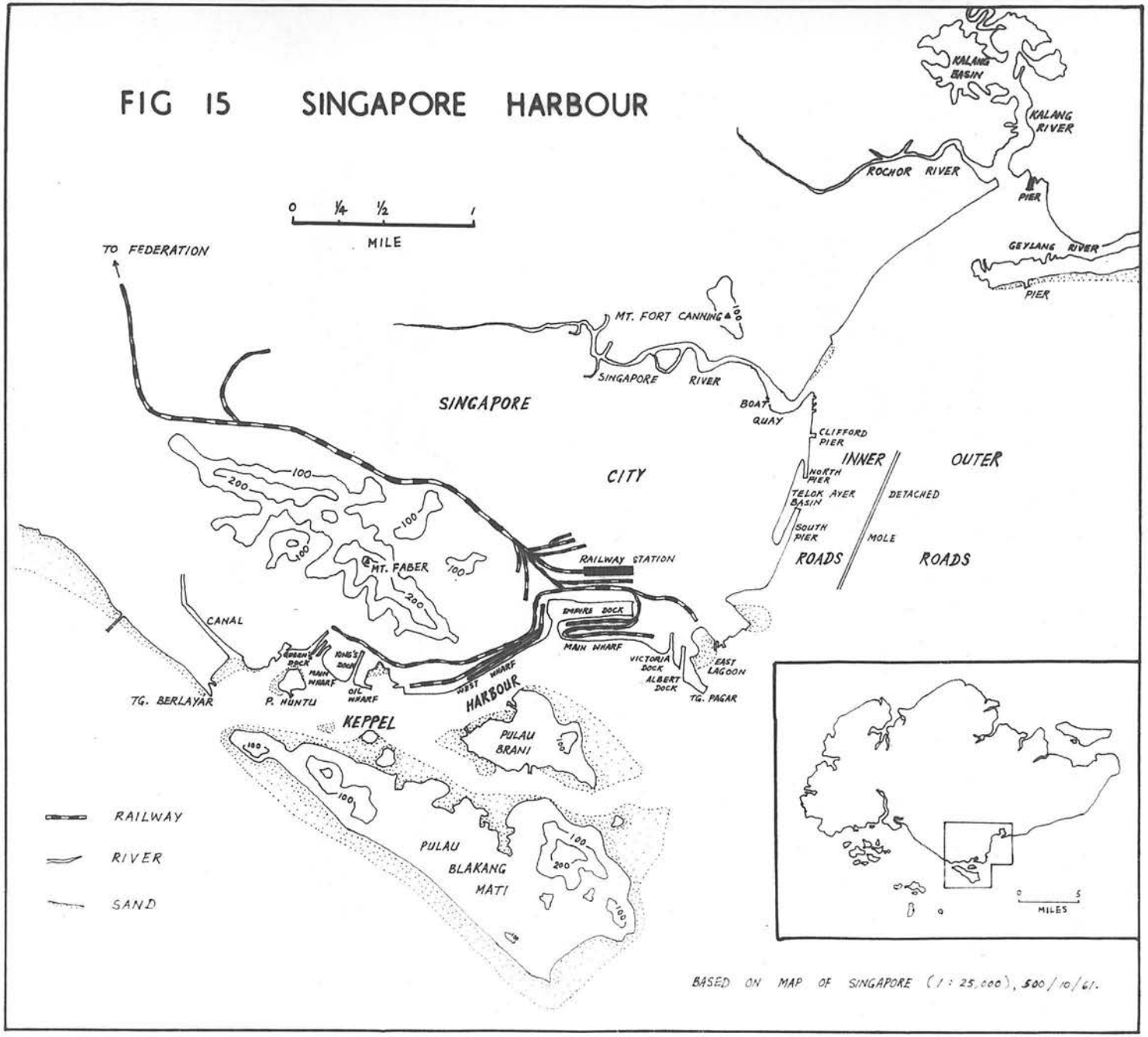
Nevertheless, Singapore remains the collecting and distributing centre for the Malay Peninsula and a large part of the Dutch colonies, particularly Central Sumatra and Borneo. It retains an important trade with Java, Siam, and Indo-China. Penang continues to be the focal point for much of the trade on both the east and west coasts of Northern Sumatra, the Malay States on the west coast and Southern Siam. The expansion in the volume and value of trade with these territories brought about by such developments as the immense extension of rubber cultivation in Sumatra and the Malay Peninsula has more than compensated for the contraction in area.

Singapore also has a good harbour and is on the principal trade route from Europe to the Far East. Equally fundamental was the policy of free trade established at Singapore by Sir Stamford Raffles in 1819, and at Penang in 1827. The effect was all the more striking because at the date every Dutch port was burdened with heavy dues and vexatious regulations. Sir Stamford Raffles foresaw that a port where no customs duties were levied and harbour-regulations were kept to a minimum would prove an irresistible attraction, and would defeat the Dutch efforts to establish a monopoly of the trade of the Archipelago. His policy was justified from its very

---

(37) See G.C. Allen and A.G. Donnithorne, "Western enterprise in Indonesia and Malaya", pp. 38-39.

FIG 15 SINGAPORE HARBOUR



BASED ON MAP OF SINGAPORE (1 : 25,000), 500/10/61.

inception; and any attempt to interfere with the freedom of the port has always been the surest way to arouse the mercantile community of Singapore.[38] Other factors have been the tendency of trade to continue to move in its long established channels, combined with the attraction of Singapore as a produce market offering high prices, skilful grading and preparation of goods for market, excellent shipping and commercial facilities, and a large assortment of manufactured commodities to take in exchange.

The improvement of port facilities has had so much to do with the maintenance of Singapore's position that no account of Malaya's trade would be complete if it omitted the Singapore Harbour Board.[39]

The port of Singapore consists of Inner and Outer Roads, and the Western Anchorage (Keppel Harbour).[40] (Fig. 15). The Inner Roads is protected by a mole, and the approaches to the anchorages are safeguarded by a very complete system of government signal stations, lights and buoys, as well as a government observatory. Originally trade centred around the mouth of the Singapore River

---

(38) See Walter Makepeace, (ed.) "One hundred years of Singapore", Vol. I, pp. 578-592 and Vol. II, pp. 1-19.

(39) The Singapore Harbour Board was constituted as a statutory body under the Ports Ordinance on the 1st July, 1913, to manage the affairs of the Port on commercial principles, and this principle has been followed by the Board ever since. The Board consists of a Chairman and ten other members representing shipping and commercial interests who use the facilities which the Board provides.

(40) The Singapore Roads consists of Singapore River, the Telok Ayer Basin and the surrounding sea area, which are made up of the Inner Roads providing a 15-foot deep anchorage for small coasters and lighters, and the Outer Roads with an open natural anchorage suitable for deep-sea vessels. The two Roads are separated by an artificial mole.

and the quays along both its banks still form the headquarters of the dealers in Straits produce. The landing places were provided by Government free of charge to those who made use of them.

The harbour lies to the south of Singapore Island, protected from the open sea by a number of small islands. There is no entrance restrictions, and the main channel, 40 feet deep, more than fulfils the minimum depth requirements (30 feet at low water) of most modern large ships.

The provision of harbour facilities was commenced in the middle of the nineteenth century by a number of companies, which later amalgamated into a single enterprise in 1899.(41) The services provided by the company proved grossly insufficient to meet the increasing shipping requirements and the Government took over the business of the company in 1905. The management was under the control initially of the Dock Board, and of the Singapore Harbour Board in 1913. Extensive modifications and improvements were made to the dockyards in the ensuing years. "The present properties of the Board consists of nearly three miles of deepwater berths stretching from the East Lagoon westwards along Keppel Harbour to the main dockyard opposite Palau Hantu and capable of accommodating twenty-one ocean ships and six coastal vessels at any one time. The wharf area is served by road and rail transport and there are bunkering facilities and water for vessels lying alongside, as well as a large number of godowns and open-air storage spaces".*

The commercial organization and services of which Singapore is the centre has been evolved to meet the requirements of the entrepot trade. These

---

(41) See Walter Makepeace, Op.Cit. pp. 1-19.

* See Ooi Jin-Bee, Op. cit., PP. 341 – 345.

include the grading, processing and packing of such regional produce as rubber, copra and tin, the provision of organized markets and credit and banking facilities, the breaking up of bulk consignments of goods for local distribution, and the maintenance of a large variety of goods in stock. Singapore has been compared with London in the enterprise and accumulated experience of its merchants. These merchants, both Asian and European, have played an important role in the evolution and development of the entrepot trade of Singapore.

Labour Supply.

There must also be taken into account the decisive role played in the earlier stages of development by the manpower and transportation.

In the early years of British rule Malaya, like most colonial areas, was faced with the problem of securing an adequate, constant and cheap supply of labour for economic development. By custom and inclination, the Malay was a peasant farmer or fisherman, he did not approve of fixed hours of labour. Thus, the planters, miners, and government departments were compelled to import labour from China and India, where centuries of over-population and the struggle for survival had produced an unlimited supply of industrious labour. The same conditions had created a similar hard-working population in Java; but Javanese have been used to only a very small extent in Malaya. The amount of skilled factory labour required has been comparatively small and has been drawn largely from China. The tin mines have been worked chiefly by Chinese and the estates by Indians; and in the government departments as a general rule construction work has been done by Chinese, and maintenance and upkeep by Indians. In some of the Unfederated Malay States where the Malay population is more dense the public services have been carried on very largely by them and they have also been employed in larger numbers on the estates.

Chinese Labour: The Chinese had traded with Malaya for centuries before the arrival of the Portuguese and a certain number of merchants had settled in the towns. Some of the Chinese families at Malacca have been there for over three hundred years.(42) Immigration on a large scale did not begin until the foundation of Penang and Singapore and was due to the security for life and property provided by British rule. The Chinese settled chiefly in the Straits Settlements, only a limited number going to the Malay States as traders and tin miners. The reasons were the insecurity and disturbed conditions which prevailed there; and the entrance of large numbers did not begin until the establishment of British control in the 1870's. From that date the Chinese poured in under the triple stimuli of the potential wealth of the country, the creation of orderly government, and the encouragement afforded by the British Government. The effect has been radically to alter the character of the population.* In the Federated Malay States for example the population grew from 373,000 in 1889, of whom the majority were Malays, to 2,052,729 in 1937, of whom 42.9 per cent were Chinese.(43) The rapid growth of the population has not been due to natural increase, for while the number permanently settled in Malaya has been increasing, the majority have eventually returned to China.(44) Most of them still leave their wives in China, although

---

(42) See Kernial Singh Sandhu, "Chinese Colonization of Malacca; a study of Population change, 1500 to 1957 A.D." in "The Journal of Tropical Geography" Vol. 15, June 1961. pp. 1-26.

(43) See Annual Report of the Labour Department of Malaya, 1937.

(44) See C. Robequain, "Malaya Indonesia and the Philippines" pp. 120-121.

* See Jackson, R.N. "Immigrant Labour and the Development of Malaya: 1789-1920" (Kuala Lumpur. 1961).

the sex ratio has been changing and in 1936 roughly a third of the Chinese in Malaya were females. The volume of Chinese greatly exceeds that of Indian immigration, the maximum being attained in 1927 when 359,262 Chinese entered and 155,198 left the Colony. In 1921-9 inclusive the average number of arrivals at Singapore was 241,754 and of departures 111,405.(45)

In the nineteenth century workers were brought from China under the indenture system. A professional recruiter engaged volunteers, paid their passages to Malaya and sometimes gave them a small cash advance, on condition that they worked off by their labour the expenses incurred. Usually the recruiter recovered his outlay together with a profit from a broker in Singapore or Penang to whom the workers were consigned. The broker then disposed of them to Chinese employers, making the best terms he could for himself according to the state of the market. The contract required the worker to work for 360 days in return for food and clothing. If employed in the tin mines he was allowed to work overtime on his own account and might earn about M$ 3 a month by so doing. Indentured labour gradually became less popular as the country developed; and also a system of co-operative working grew up which to a considerable extent replaced it. A Chinese capitalist (usually called the advancer) with a piece of mining land engaged a foreman and workers. He supplied them with all their requirements and the profits from the enterprise were divided in pre-arranged shares. If the ground proved to be rich in tin the advancer made a very good profit and the overseer and workers got a respectable share. If the venture was a failure the whole money loss fell on the advancer, and while the workers lost the value of

---

(45) See Annual Report of the Straits Settlements, 1930.

their labour, they had been fed, clothed and housed, and had received small cash advances. Another form of co-operative mining was for Chinese with little money to club together to take out and work a mining licence. If the profits were good a licence-holder might eventually be able to take out a mining lease and hire workers to work it for him.(46)

Chinese immigration includes comparatively few labourers recruited directly for estates. Practically all the Chinese come from Kwangtung and the other provinces of South China or from the island of Hainan. Of the various tribes the Hokkiens engage in agriculture and trade, Cantonese and Khehs provide the bulk of the miners, and Hailams are found chiefly in domestic service. There are in addition the Straits-born Chinese who are increasingly a minority.

In 1937, 51,906 Chinese were employed in the mines, 75,589 on estates, 44,585 in factories and 6,424 in government departments.(47) This was 77.6 per cent of the total number of miners, 21.3 per cent of the estate and 78.8 per cent of the factory workmen, and 10 per cent of those employed by Government. The Chinese mine labourer is employed in one of three ways: he may work for a daily wage, or by contract, or in a small minority of cases by the tribute system. The tribute labourer usually forms one of a group who, having had their supplies advanced to them by a mining speculator, work the ground and share all profits that are left after the advancer has had his tribute paid to him. Wages may be either a fixed daily amount or by piece work: the

---

(46) See Swettenham, "British Malaya", pp. 233-235. also Blythe, W.L. "Historical Sketch of Chinese Labour in Malaya". JR.AS.M.B. Vol. XX pt. I. (1947) pp. 64-114.

(47) See Annual Report of the Labour Department of Malaya, 1937. pp. 110-118.

Chinese are very partial to payment by results since it enables the more capable workmen to earn more. In 1937 about 80 per cent of the Chinese in the mines of the Federated Malay States were engaged on piece work. The labourer is frequently engaged through a Chinese contractor who acts as interpreter since few Europeans can speak the vernaculars, receives his men's wages and distributes them, retaining a percentage for himself. The working day is usually eight hours with extra payment for overtime, and the labourer employed on wages also receives free food and housing. The payment of wages, housing and health are subject to government inspection.

The Chinese furnish the bulk of the skilled and unskilled labour in Malayan industries*, and wages are considerably higher than on the plantations. Factories and workshops are regulated by a series of Labour Ordinances which have enabled a number of International Labour Conventions to be put into effect. Hours are limited to nine a day, any overtime receiving double the normal pay, and the working week is six days. No child under twelve may be employed; and any dispute about wages may be referred to the Controller of Labour whose decision is final.

Prior to 1930 no restrictions were placed upon Chinese immigration, but a change of policy became necessary owing to the very heavy unemployment caused by the Great Depression. In 1930, 167,903 returned to China, many of them being labourers unable to find work. During the same year 242,149 Chinese arrived in the Colony; and it was clearly necessary to prevent an influx of labourers who would merely add to the unemployed.⊛ The Netherlands East Indies were compelled to regulate immigration for the same reason. The Straits

---

* See Purcell, V., "The Chinese in Malaya" (London, 1948).

⊛ See "Report of Labour Department", 1935.

Settlements Immigration Restriction Ordinance which had been passed in 1928 was not enforced until 1st August, 1930, when a similar Ordinance was enacted in the Federated Malay States*.

At first the number admitted was 6,016 a month which was distributed amongst the shipping companies that had been bringing immigrants from China. It applied to adult male labourers, no restriction being placed upon the entrance of women and children. The Government promised to keep in close touch with the labour market and raise or lower the quota so that Malayan employers would not suffer from a shortage of workers.(48) The quota was reviewed quarterly and as the depression deepened it was gradually reduced to 2,500 a month and in July, 1932, to 1,000. Many of those admitted were former Chinese residents returning to Malaya. Simultaneously there was a large and increasing emigration to China, the Government repatriating those who could not afford to pay their own way. In 1932, 282,779 Chinese left Malaya and 32,925 arrived, of whom 14,609 were women and children. The Aliens Ordinance of 1932 extended the control of immigration to all adult males of all classes other than British subject and British protected persons, but the race principally affected was the Chinese.(49) In 1934 conditions began to improve owing to the control of tin and rubber; the monthly quota was gradually increased to 4,000, and in addition 5,902 Chinese were admitted by certificates issued to bona fide employers who certified that the labour was

---

(48) See Proceedings of Legislative Council of Straits Settlements 1928, pp. B9, B36-B37.

(49) Indian immigration was simultaneously reduced greatly by ceasing to issue kangany licences and by suspending assisted passages except to Indians who had previously been residents of Malaya or to their dependents.

* See "Report of Labour Department", 1935.

required. In 1937 immigrants from China were 239,106 of whom over half were women and children while the emigrants were [illegible].[50] 58,602

The numbers are much smaller than prior to the depression and mirror the changed conditions in Malaya. The continuance of tin and rubber restriction has greatly reduced the demand for labour. Unless new uses are discovered which would increase consumption it would seem that the great period of expansion with its alternate booms and slumps is at an end, and that for some years at least regulation and restriction of output will be the future for both industries. In that event they will require a labour force which is both smaller than formerly and less subject to sudden fluctuations in size. A second process has been at work in Malaya which has also progressively lessened the volume of employment on the plantations and particularly in the mines. This is the use of labour-saving machinery and more economical methods of working, which have reduced costs of operation and increased production.[51] The immigration system has been operated with flexibility so that the mines and estates do not appear to have suffered from a shortage of labour when the export quotas have been increased.

Indian Labour. The Indian connection with Malaya began early in the nineteenth century, since the regiments forming the garrison came from Madras.

---

(50) See Appendix I.

(51) In the tin mines, for example, the largest number of labourers employed was 229,778 in 1907 when the output was 48,429 tons. In 1929 the production was 69,366 tons but the labour employed was only 104,468; and while the output in 1937 was larger, the number of miners was only about three-quarters of what it had been eight years earlier. See Federated Malay States, Report on the Mines Department, 1934, p. 8.

South Indian labourers were brought in by the sugar and coffee planters at their own expense and under indenture to work for three years at a wage agreed upon at the time when the labourer was engaged. The great majority of the Indians have always been Tamils and the remainder Telugus and Malayalese.*

In the nineteenth century when estates were few and only a moderate number of labourers was required: from 1880 to 1904 the average number of arrivals was usually about 20,000. The expansion of rubber planting however caused a rapid increase in the demand for labour and from 1911 to 1920 arrivals from India averaged 90,000 a year.

Due to the rapid increase of the Indian immigrants, a new system was established in 1907. The Indian Immigration Committee was created to control the recruitment of Indian labour for the Colony, the Federated Malay States, and Johore. Its operations were later extended to include the whole of Malaya except Trengganu, in which there are very few estates.

The new system proved so satisfactory that in 1910 the recruiting of indentured Indian labour was abolished. Meanwhile the Indian Immigration Committee had begun to eradicate abuses which might arise from the use of kanganies.(52) In 1908 free passages from India were granted to all labourers who applied for them, which eliminated part of their debt to the kangany who had previously advanced to them the cost of the journey.

---

(52) A Kangany was a recruiting agent sent over from Malaya by a planter to obtain labourers for the estate, and paid a fee for each man whom he induced to volunteer.

* See Bozman, G.S., "Some problems of Indian emigration", Asian Horizons, Vol. I (1948) pp. 13-25.

From the beginning of the century all kanganies had been required to have a Malayan Government licence, and after 1908 these were issued at the request of the employer by the Deputy Controller of Labour at Penang. After the appointment in 1923 of an Agent of the Government of India in Malaya all licenses were countersigned by him. To prevent the engagement of professional labour recruiters it was stipulated that the kangany must be a South Indian of the agricultural classes who had worked for at least three months at the place of employment for which he intended to recruit.

However, Indian immigrants of a type distinct from either contract or kangany labour gradually appeared. These were non-recruited labourers who came to Malaya of their own volition. Usually they were men who had previously worked there and who eventually returned from their villages in India. Often they were accompanied by friends or relatives whom they had persuaded to emigrate by their tales of the great superiority of Malayan to Indian rates of wages. In 1920 12.2 per cent of the total of 70,600 adult entrants into Malaya were non-recruited while the remainder were brought in by kanganies. The number of adult Indian immigrants in 1926 was exceptionally large, and 20 per cent of the total of 127,800 were non-recruited. The percentage of kangany recruits continued to decline, and in 1929 37 per cent of the adult Indian immigrants were non-recruited*. During the depression immigration was suspended and an extensive repatriation of unemployed labourers took place. When the restrictions were relaxed in 1934 the prevalence of voluntary labour was much more marked. Out of the 47,500 adult Indians who entered Malaya in 1937, 89 per cent were non-recruited, and only 5,300 were brought in by

---

* See "Report of the Labour Department", 1920 and 1931.

kanganies.(53) These percentages show almost a complete revolution in the method of recruitment in seventeen years: in 1920 about 12 per cent of the labour was voluntary and 88 per cent obtained through kanganies, while in 1937, 89 per cent was non-recruited and only about 11 per cent brought in by kanganies. The immediate but not the real explanation was that by 1937 the majority of the rubber plantations had found that they could rely on non-recruited labour and had no need to employ kanganies. It was true that they never knew how many labourers would materialize or exactly when they would arrive; but on the other hand the greater certainty of the kangany system had been purchased at an additional cost of about M$ 6 to M$ 8 a head. Some of those who still employed kanganies were palm oil and tea planters whose estates had only been established a few years. They had not had time to build up a connection with a recruiting ground in India and still needed kanganies as advertising agents to inform the South Indians of their existence. The others were rubber planters who had been accustomed to draw their labour from the more remote districts of the Madras Presidency. The real reason for the weakening of the kangany system was the reputation which Malaya had earned amongst the labouring classes of Southern India. In 1938 recruitment of the kangany was abolished by the Government of India.

Although the majority of the Indian labourers are employed on estates considerable numbers are also found in other employments. In 1937 the distribution was as follows:- estates, 243,999; mines, 8,680; factories, 9,297; government department, 44,783; Total, 306,759.(54)

---

(53) Indian labourers have shown a growing tendency to bring their families with them; and if the figures for wives and children were included the above statistics would be considerably enlarged. See also "Report of the Labour Department" 1935, and 1937.

(54) See Annual Report of the Labour Department of Malaya 1937, pp. 110-118.

Indians were employed in the Railway and Public Works Departments and by the Municipalities, Town and Sanitary Boards. Employment was usually permanent, housing and free attendance in Government hospitals were provided, and the wages were normally the standard rates or somewhat higher. Labour in the mines was less closely supervised than on the estates, to which the Labour and Medical Departments gave most of their attention, though the payment of wages, housing, and health were subject to government inspection. Miners, as well as estate and industrial labourers, were entitled to compensation for injuries received in the course of their employment. No amenities were provided by employers in the form of housing, education, and medical attention; but on the other hand the rates of pay were higher.

According to the census of 1931, 131,505 or 21 per cent of the Indian population were born in Malaya. The majority were labourers in the estates, mines and Government departments. A few were small-holders or owners of rubber estates. To some extent the successful operations of Indian money-lenders who had also acquired fairly considerable areas of agricultural settlement from Malay small-holders who were in their debt. Part of the permanently settled population was urban and comprised moneylenders, merchants, petty traders, lawyers, doctors, and clerks in government and private employment.

Javanese Labour. Javanese have been employed to a limited extent, the total number in 1937 being 15,603, most of whom were labourers on estates, especially in Pahang, and received about the same rate of pay as Tamils. The small number seems surprising in view of the industry of the Javanese and the proximity to Malaya; and as long ago as 1890 employers considered the possibility of recruiting labour from there. Little came of the suggestion owing to the high cost of recruitment inseparable from contract labour and

the success which attended the immigration of free labour from India. The Government of Malaya disliked this anomalous remnant of the contract system, but the Government of the Netherlands East Indies insisted on its retention and only agreed to its abolition in 1932 after protracted negotiations.

In 1909, Javanese began to emigrate to Malaya at their own expense and were employed on a monthly contract either on piece work or on daily wages. In 1931, only about 1,400 of the 11,000 Javanese in Malaya were indentured, the remainder being free labourers, and in 1932 there were only seven contract labourers.

The Javanese was to be entitled to leave his employer at any time on giving a month's notice. The arrangements do not seem to have had any appreciable effect in increasing the number of Javanese employed in Malaya.(55)

"Conditions of labour in Malaya are decidedly superior to those in many parts of the tropics: the immigrants are far better off than in their own countries, and their eagerness to emigrate is the best evidence that they are well aware of the situation. In almost all its essentials the system which has produced these results has been evolved by the Malay Government and employers without outside pressure. At the same time it is only fair to point out that Malaya has been favoured beyond many tropical dependencies in its natural resources. The large revenue which their development has brought made it possible to finance the heavy cost of the system of labour with its elaborate medical and other social services".*

---

(55) See Proceedings of Federal Council of Federated Malay States, 1932. pp. B43-B45.

* See L. A. Mills, 'British rule in Eastern Asia', (1942).

Construction of railways and roads

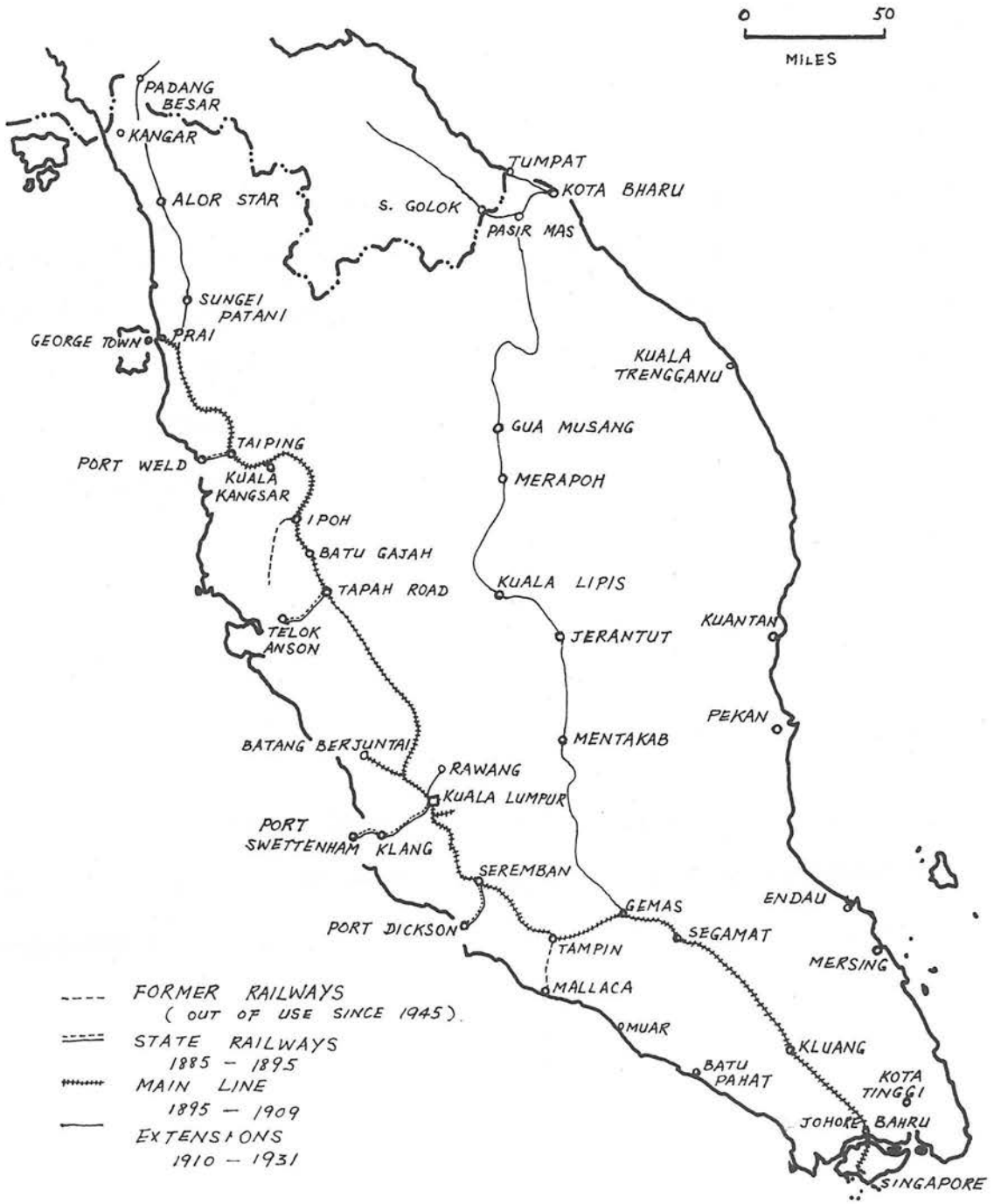
When the Malay States began to come under British protection the only means of communication internally was by river, and each state, corresponding roughly with a river-basin, was politically and economically isolated from its neighbours by stretches of jungle passable only with great difficulty by paths through the forest. There was only one road, about twelve miles long, in the whole of Perak, from the Chinese mines to the navigable estuary of the Larut River, and a few miles of rough cart track in Selangor running from the Chinese town of Kuala Lumpur on the Klang River to the mining camps in the vicinity. Apart from these there was nothing except rough jungle tracks which were used as little as possible because of their difficulty. The sole real means of communication were the rivers along which the villages of the Malays were built.(56) So, one of the first needs was to clear the rivers, since many of them had been rendered impassable by great trees which had

---

(56) Sir Frank Swettenham has described from his own experience the conditions of travel at that time:

> "The country folk moved about but little, for they knew the difficulties too well. A boat journey of a hundred miles down river would take a week and back again a month or more. When people of consideration had to journey by land they travelled on elephants if they could get them, and cut their way through the jungle. Pedestrians had to foot it as best they might; over the roots, through the thorns, wading or swimming rivers and streams, ploughing through miles of bog and mud in the heat and rain, stung by everything that stings, and usually spending two or three nights in the jungle with any kind of shelter that a chopper and the forest could supply."

FIG 16 RAILWAY SYSTEM



(AFTER FISHER).

fallen across them, and by the bed of the stream being blocked by the accumulated timber of ages+. Simultaneously all the money which could be borrowed from the Colony and all the surplus revenue were spent on the construction of roads.

A few years later in 1884 the first railway was built to connect Taiping, the mining centre of Larut, with Port Weld eight miles distant on a deep water inlet of the Larut River. At the same time a railway twenty-two miles long was built from Kuala Lumpur to Klang*. The reduced costs of transport brought about by the railways made it economically possible to develop additional tin areas, and so in turn provided the revenue with which further extensions of the railway system were built. In 1895 a railway was completed from the port of Teluk Anson to Ipoh in the Kinta Valley, the richest tin field in the world. By 1900 150 miles of railways had been built.Ø (Fig. 16). The advent of rubber created an additional urgent demand and at the same time provided more revenue for construction.

Those built-up railways were placed under the unified management of the Federated Malay States Railway Department, and it was planned to connect them by a line from north to south. Within ten years the Federated Malay States completed this main line connecting Taiping, Kuala Kangsar, Ipoh, Kuala Lumpur, Seremban and Tampin with extensions into Straits Settlements territory at Prai

---

+ See Report on Rivers in the Federated Malay States, 1928 (Kuala Lumpur, 1928).

* See C.A. Fisher, "The Railway geography of British Malaya", Scottish Geographical Magazine, Dec. 1948, pp. 123-136.

Ø Ibid.

in the north and Malacca in the south. In 1908-9 the main line was continued southwards through Gemas and Segamat to Johore Bahru, where a ferry connected with the short line across Singapore island*. After 1909 it was, therefore, possible to travel by train and railway ferry from Penang to Singapore, and the tin-mining regions and rubber estates were directly connected with these ports. This happened just at the time when the rubber industry was expanding rapidly, and helped to bring about the prosperity of the west-coast states during the first two decades of the present century.

After the First World War it was hoped that the construction of another line through Pahang and Kelantan would open up these states in the same way. Construction was started from Tumpat in the north and Gemas in the south. By 1920 the southern section had reached Kuala Lipis, but the post-war slump and the difficulties of the terrain delayed the completion of the line until 1931.(57) At the same time links were made with the Royal Siamese State Railway at Padang Besar in the west and Sungei Golok in the east. (Fig. 16).

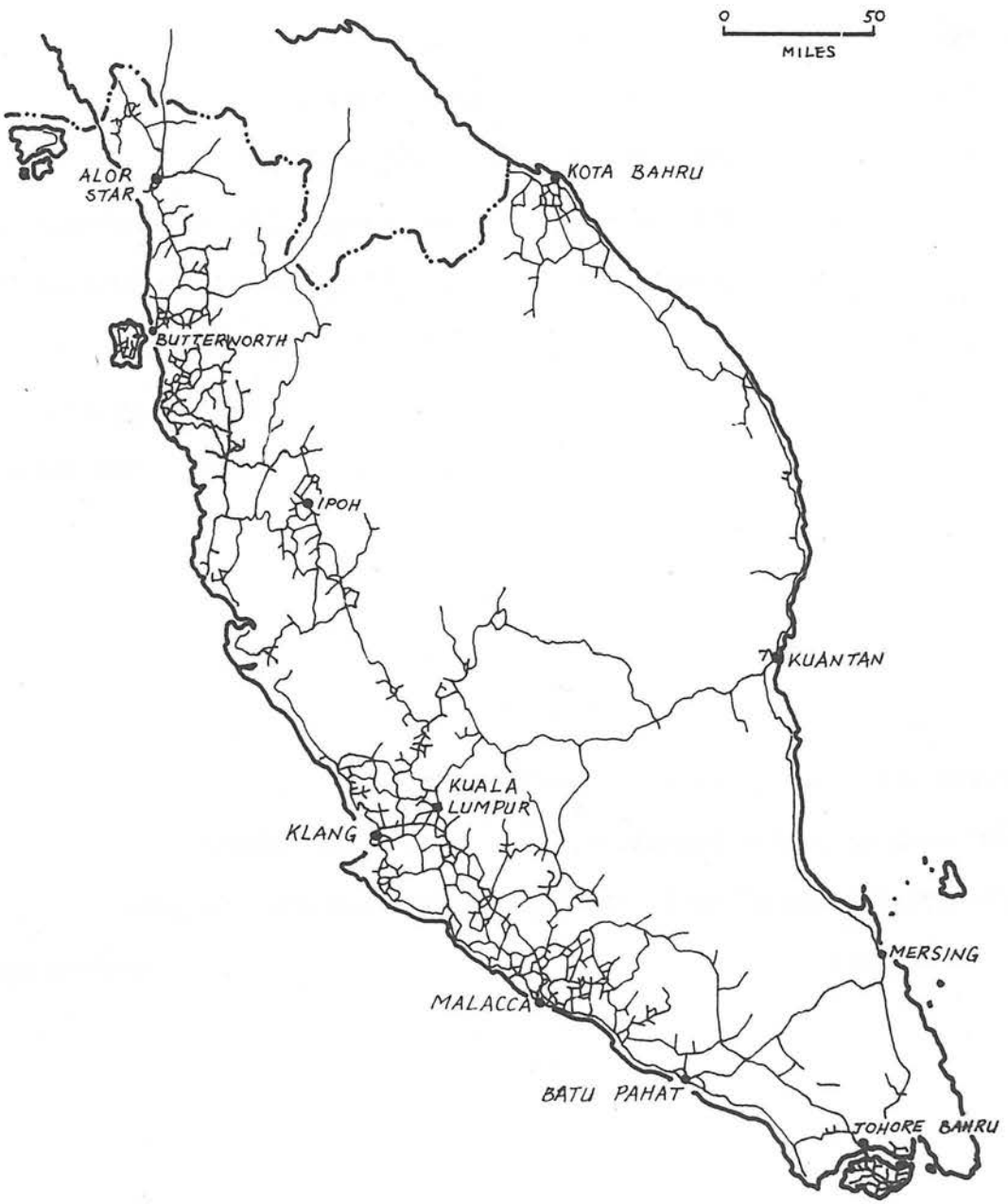
On the other hand, the work of road-making was slow, difficult, and expensive in the early days, but the developments were gradual. In Perak, and in Selangor, a small Public Works Department was started soon after the appointment of British Residents, while Pahang and Negri Sembilan each had a Clerk or Superintendent of Works.

---

* See Federated Malay States Railways, "Fifty years of railways in Malaya, 1885-1935", (Kuala Lumpur, 1935).

(57) Ibid. During the Second World War the Japanese removed the rails from the east-coast line and several branch lines. The east-coast line was opened again in 1954. The branch to Malacca has not been relaid.

FIG 17 ROAD SYSTEM



BASED ON MAP OF MALAYA (No. 20 - 1959).

Roads were built as revenue became available, and where they seemed most needed for economic development. Most expenditure obviously occurred at first in those states which had most revenue in Perak and Selangor rather than in Negri Sembilan and Pahang. The Public Works Departments of these four states were amalgamated in 1901, by which time the chief official in each state was known as the State Engineer. By the 1901 arrangement the four State Engineers served under a federal Director of Public Works, and in the years immediately following Pahang and Negri Sembilan received a little more attention; but they still lagged a long way behind the other two, Pahang having easily the least mileage of cartroads or bridle-roads.(58) By 1906 the Federated Malay States had a total of approximately 1600 miles of metalled cartroads and 270 miles of unmetalled cartroads.(59) In the years which followed the end of the First World War this road system was adapted, by widening and strengthening, for the use of motor-traffic. Emphasis was given to trunk roads, especially a western road from Johore Bahru through Kuala Lumpur to Kedah and the Thai border. An east-coast trunk road, less well surfaced, runs from the principal trunk road, north of Johore Bahru, to Kota Bharu and Tumpat. Nearly all the roads which link with these north-south routes are in the west-coast states, apart from two main east-west linking roads, one in Johore, the other between Port Swettenham, Kuala Lumpur, and Kuantan. (Fig. 17).

---

(58) Before the coming of the motor-car, the roads were classified as metalled cartroads, unmetalled cartroads, bridle-roads, other paths and "gravelled".

(59) See A. Wright and H.A. Cartwright (ed.), "Twentieth Century Impressions of British Malaya", p. 316.

In modern Malaya there are many areas with no main road, and the total road mileage (about 6,000 miles) is not high, but the pattern of roads constructed since the 1880's compares very favourably with the road systems of other South-East Asian countries*.

Such, in brief outline, was the nature of road and railway developments. There were many significant consequences. Villages and areas of cultivation followed along the track of the roads, new settlement areas followed and land in many districts began to have some value for the first time. Telegraph and postal services developed in conjunction with roads and railways. In the early years of the present century mail carts pulled by "trotting bullocks" conveyed mails to estates and mines, while motor-car mail services were being introduced into some main centres. Telegraph lines mostly followed the route of the railway, and where there were no post-office lines railway stations accepted telegrams for transmission through their own service⊕.

Trade and industry benefited most. Tin-ore and plantation-rubber could be moved quickly by rail, and later by road, to the ports. Essential supplies travelled in the opposite direction. A number of new ports were created at the coastal railheads - Port Weld, Telok Anson, Port Swettenham and Port Dickson, all named after British officials. These were all railway ports, (Fig. 16) equipped with wharves and jetties, with Port Swettenham easily the most important. It was built in the first decade of the present century on land reclaimed from swamp, and it provided anchorage for ocean-going

---

* See Williams, F.H.P., "Report on Roads and Road Problems in Southeast Asia and the Caribbean", (London, 1957).

⊕ See Morgan, W.S., "Pioneers of Malaya's transport", British Malaya, Vol. 20. (1945), pp. 172-174.

steamers and easy access to and from the mining and rubber areas of Selangor. Meanwhile, Penang's position was enhanced by the ferry-link to the railhead at Prai.

Railways and roads absorbed immigrant labour, especially, in the construction and running of railways, from India and Ceylon. They also contributed to the growth of towns. Gemas and Port Swettenham were creations of the railway; Kuala Lumpur owed some part of its growth to its function as a railway centre with railway workshops. Railways and roads also helped, of course, to increase communication between different states, though not with any direct consequences as regards political unification.

The railway ports were used by local as well as distant shipping, and the Straits Steamship Company was very prominent in this coastal trade. It was founded in Singapore in 1890 with a mixture of British and Malayan Chinese investment. Its capital and shipping-fleet expanded rapidly. By the mid-1920's it had a fleet of forty-eight vessels, many of them specially constructed to suit local conditions, and it was serving fifty-three ports in South-East Asia.(60)

The pattern of railways and roads served both as a cause and an effect of economic development, and also helped to determine its character. When land was taken for large-scale rubber planting, the sites mainly chosen were ones which lay near existing means of communication, especially railways.

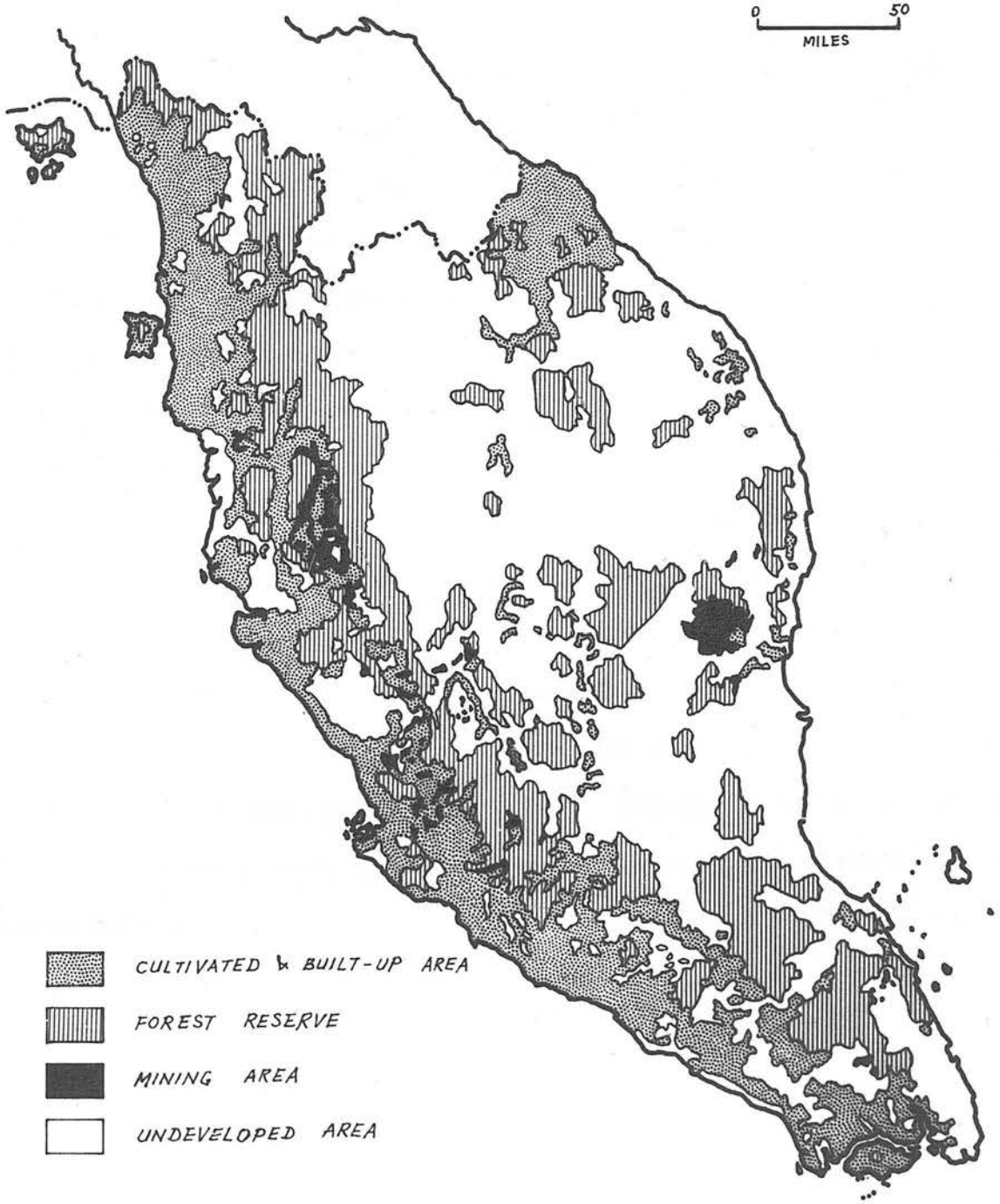
Lopsided Development.

From the analysis of the previous sections, a picture of lopsided development of the country is obviously illustrated. The western part of Malaya is far more developed than in the east. (Fig. 18).

---

(60) See G.C. Allen and A.G. Donnithorne, "Western Enterprise in Indonesia and Malaya", p. 217.

FIG 18 DEVELOPED AREA



BASED ON MALAYA LAND UTILIZATION MAP (NO. 29-1953).

The development of the rubber and tin industry is reflected in the rapid development of the west coast of Malaya, where the climatic and soil conditions as well as the sheltered position of its harbours are favourable to the growth of rubber and the rise of ports to meet the needs of the hinterland trade.

The western coastal plains are accessible by navigable rivers. On its sheltered coastline have sprung up the main ports of Malaya. The eastern regions on the other hand are completely isolated by the north-east monsoons which have laid bare the mountain slopes, caused the rivers to flow rapidly and rendered the whole coast inaccessible during the winter months. Moreover there are much better agricultural and mining lands on the western than on the eastern coast.

These natural advantages have favoured the growth of trading settlements on the west coast, and their progress has been further stimulated by the expansion of the tin and rubber industries on the western hinterland. The rapid expansion of those two industries came after the establishment of British Control in 1874 of the former Federated Malay States, which with the exception of Pahang were located on the west coast. Tin mining had of course been started on a small scale by Chinese enterprise and labour both in the western and eastern Malay States long before the establishment of British rule. But it was not until the establishment of British political control that production began to expand. The first tin rush took place in the 1880's when European capital first began to participate in the industry with the establishment of the first European company.

At the same time rubber production began to spread throughout the western states. In fact, the forty years after the establishment of British control of the Malay States saw the rapid development of the two major industries of

Malaya. The progress of the western states was thus essentially due to the development of these two industries.

This is clearly shown by the concentration of rubber estates and tin mines in the western coastal states. (Table 2.1 and 2.2).

Table 2.1. Geographical distribution of Rubber Estates 31st December, 1939.

	No. of Estates	% of Total	Acres ('000)	% of Total
Straits Settlements	306	12.5	209	9.9
Federated Malay States	1,313	52.9	1,066	50.6
Unfederated Malay States	880	34.6	832	39.5
Total Malaya	2,499	100.0	2,107	100.0

Source: Malaya, Department of Agriculture, Malayan Agricultural Statistics, 1939. Table 8.

It will be seen from table 2.1 that 60.5% of the total acreage under estate rubber was in the former Straits Settlements and the Federated Malay States. About 46% was in Perak, Selangor and Negri Sembilan - all of which are on the west coast. The Straits Settlements had about 10% of the total acreage. Of the Unfederated Malay States, Johore which is on the south of the peninsula, had the largest area under rubber cultivation - about 26% of the total acreage. Kedah and Perlis, which are also on the west coast, had about 10% of the total. Hence about 92% of the total acreage was in the west and south of the Penincula. (Fig. 14).

The western coastal states are also the area of the greatest concentration of tin mines. (Fig. 10). Although tin mining began in the Unfederated Malay States on a small scale, about 97 per cent of the total production before

the Second World War came from the Federated Malay States. Table 2.2 shows the relative volume of production in the different regions in 1937.

Table 2.2. Production of Tin in different States of Malaya, 1937.

	Tons	% of Total
Straits Settlements (Malacca only)	72	0.1
Federated Malay States	75,077	97.2
Unfederated Malay States	2,075	2.7
Total	77,224	100.0

Source: Malayan Year Book, 1939. p. 73.

One of the important consequences of the development of the rubber and tin industries was the rapid growth of population, especially in the states and settlements along the west coast. This increase was brought about by the influx of immigrant population, which supplied the labour force required for the two major industries. The Malay peasants, accustomed as they were to a subsistence economy, were not interested in working for a wage, and consequently the expanding demand of the rapidly developing industries had to be met by the influx of immigrant Chinese and Indian labourers, who entered the Malay States in large numbers as miners and estate workers. In particular, the greatest increase of Chinese immigration came in the closing decade of the last century, when the work of clearing the jungle, building roads, expanding the mines and establishing plantations was undertaken.

The rapid growth of population in the western coastal region is illustrated by the official estimate of population increase in Perak during the closing decades of the 19th century. In 1879 the population of Perak was officially

estimated at 81,000; a decade later the figure had risen to 195,000. The census of 1891 showed a population of 211,245 in Perak.(61)

It will be seen from table 2.3 that the rest of the Unfederated Malay States which consisted of the eastern States of Kelantan and Trengganu, showed the least increase in population throughout the period 1911-1931.

Table 2.3. Percentage increase of population in the different States of Malaya, 1911-1931.

	1911-1921 %	1921-1931 %
Straits Settlements	23.7	26.9
Federated Malay States	27.7	29.3
Johore	56.4	79.0
Kedah	37.7	26.9
Rest of the Unfederated Malay States	7.0	18.0

Source: Malaya, 1931 Census Report, p. 32.

Between 1931 and 1947 the rates of population growth in Kelantan and Trengganu were much more rapid and more comparable to those in the western states.(62)

Johore and Kedah are outstanding examples of states on the west and south coast which showed a very rapid growth in population because of the opening up of the country. The growth of population in Johore during the period 1911-1931 was the most rapid compared with the rest of Malaya.

(61) See Rupert Emerson, "Malaysia, A study in Direct and Indirect Rule", New York, 1937. p. 130.

(62) See Malaya, 1947 Census Report, pp. 136-137.

As compared with the eastern states, the western states show a much greater concentration of the population. This is easily seen from the relative population densities in the different states.(63)

On the other hand, the regional variations in the density of the motor road network shown in Fig. 17 also correspond fairly close to the differences in degree of economic development between the western part of the peninsula and the east.

The basic pattern of circulation has been determined by the prior development of the two main ports of the former Straits Settlements, namely Singapore and Penang. During the second half of the 19th century export produce consisting mostly of tin, moved from the foothills by river, and later by the first Malayan railways to such west-coast ports as Telok Anson, Port Weld, Port Swettenham and Port Dickson (Fig. 16). From these in turn it was carried by small coastal craft to one or other of the two major Straits Settlements ports where, after preliminary processing, it was reloaded on to ocean-going vessels for export overseas. At the same time mining equipment, together with rice and essential consumer goods for the miners, moved in the opposite direction from Singapore and Penang to the Western Malay states.

Both of these great ports, especially Singapore, served a much wider area than the Malay peninsula, for both were at the same time nodal points for local South-east Asian shipping and regular ports of call for ocean-going passenger and cargo vessels sailing between Europe and India on the one hand and the Far East and Australia on the other.

---

(63) See Appendix II.

To a recognizable extent this pattern has survived to the present day, though, so far as the peninsula hinterland is concerned, the spectacular development of road transport during the present century has led to a relative decline in the importance of coastal shipping as the link between the tin and rubber belt and the major ports. Moreover, beginning in the early years of the century, the Federated Malay States in a somewhat prophetic outburst of local patriotism, embarked on a policy of developing Port Swettenham as the "Federation's own port", and especially since 1945 this port has far outstripped all the lesser centres of the west coast and is now on the way to catching up with Singapore and Penang.

However, apart from the reflection of the development of tin and rubber as well as the labour supply; the development of ports on the western coast,(64) together with the railway and road systems, which have also provided a good advantage for the regional development of the west coast rather than the east coast of Malaya.(65)

Not only has there been an unequal rate of development as between the western and eastern coastal states, but there has also been an unequal rate of development in the different productive sectors. This will be clearly seen in the next chapter.

---

(64) An important reason of the early development of ports concentrated along the west coast was caused by the geographical factors of the rough and stormy sea in the east during the winter months; but it did not exist in the west because of the protection from the Sumatra.

(65) An obstacle in the way of travel or trade between west and east is the physical bar of the Main Range running from north to south through the centre of the peninsula.

Chapter III.

General features of the economy

An important characteristic of the Malayan economy is its heavy dependence on the production and export of primary products, particularly rubber and tin. This is substantially a correct picture but perhaps conveys inadequately the predominance of rubber, and also the importance of the entrepot trade to Malaya's prosperity. Tin has had a very great impact on the public finance of Malaya, and by making it possible to build railways and roads out of current income and to develop a fairly elaborate structure of government it has been partly responsible for the growth of the rubber industry. But at least ten people are employed directly or indirectly by the rubber industry for every one employed directly or indirectly by the tin industry. And the impact of fluctuations in the price of rubber on Malaya's national income is far greater than that of fluctuations in the price of tin. Other important export commodities are iron ore, vegetable oils and timber.

The gross national product (GNP) for Malaya is estimated at M$ 7,920 million for 1961 at market prices,[1] while for Federation is estimated at M$ 5,720 million and for Singapore, M$ 2,200 million. Recent gross national product annual growth in Federation is estimated at about 4 per cent; in Singapore, after a levelling off in 1958-60, the growth rate is somewhat lower than in Federation.

For Malaya, exports of domestic goods and services amounted to about M$ 3,720 million or over 45 per cent of the combined national products in 1961. The contribution of manufacturing industry to GNP is not yet substantial

---

(1) See I.B.R.D. "Report on the Economic Aspects of Malaysia", July, 1963. p. 102.

compared with that of the other traditional sectors of the economy. This contribution in 1961 was around 14 per cent in Singapore and 6 per cent in the Federation. In contrast to this, rubber contributes about 18 per cent of the combined national product for Malaya.

Agriculture.

Malaya is principally an agricultural country. This sector of the economy provides employment for a large part of the population and contributes a major part of national revenue. About 17 per cent of the total land area of Malaya is used for agricultural production. (Table 3.1.)

Table 3.1. Main crop Areas of Malaya. (in Square Miles)

Main Crop	Federation	Singapore	Malaya
Rubber	6,130	10	6,140
Rice	1,489	-	1,489
Coconut	813	8	821
Oil palm	220	-	220
Fruits	334	3	337
Other crops and fallow land *	600	39	639
Forest reserves	13,250	-	13,250
All other land	27,864	160	28,024
Total	50,700	220	50,920

* Land devoted to permanent production of forest crops.

Source: I.B.R.D. "Report on the Economic Aspects of Malaysia" July 1963, p.99.

Rubber, the most widely grown crop, is the backbone of the Malayan economy. The country produces over one-third of the world's supply of natural rubber, and, despite the competition of synthetic rubber, there is no doubt that it

will continue to be a mainstay of the country's economy.

Other export crops were produced in Malaya long before the successful introduction of rubber. In the first half of the nineteenth century pepper was important and later nutmeg and cloves until plant diseases destroyed the industry. In the mid-nineteenth century sugar production became important in Province Wellesley and, later, coffee was introduced in Perak and Selangor, where for a time it flourished. The expansion of rubber, which was such a profitable crop, reduced the incentive to persist in the establishment of other plantation crops, but the present need to diversify agriculture and to reduce dependence on one crop will no doubt lead to the expansion of other export crops. A wide variety of foodstuffs, such as padi, maize, coffee, tea, vegetables and fruits are also produced in Malaya. A great deal remains to be done to improve the yield and production of such local crops as well as to improve the rearing of cattle, pigs and poultry, for these will all provide important sources of food for Malaya's growing population.

Rubber. The Para rubber tree - Hevea Brasiliensis - was introduced in Malaya in 1877, but it was not until about 1905 that the rubber plantation industry began to develop to any extent (See Chapter II). Since then the fortunes of the Malayan economy have been closely tied up with those of the rubber industry.

The rubber tree is particularly suited to Malayan conditions, since it is tolerant of soils which are unsuitable for most other important tropical economic crops. Since many Malayan soils are poor in quality, rubber is one of the few crops which has stood the test of time.

Table 3.2 shows the steadily increasing rubber production since the early years of the century in the territories now comprising the Federation of Malaya.

Table 3.2. Rubber Production in the Federation ('000 tons)

Year	Estates	Smallholdings	Total
1910	N.A.*	N.A.	5.7
1920	N.A.	N.A.	174.3
1930	234.1	215.2	449.3
1940	331.6	212.7	544.3
1950	375.8	316.7	692.5
1960	413.2	292.8	706.0
1963	458.3	328.4	786.7

*N.A. = Not Available

Source: Sir Andrew McFadyean, "The History of Rubber Regulation Regulation 1934-1943" and "Rubber Statistics Handbook", 1963, p. 35.

As table 3.2 shows, the industry is divided between estates - mainly European but also Asian owned - and smallholdings, all Asian owned.

The estates vary greatly in size, from a few hundred to several thousand acres each. Although there are over two thousand estates operating, the number of effectively independent units is considerably less, owing to interlocking directorates and the common management of a number of estates by secretarial firms.

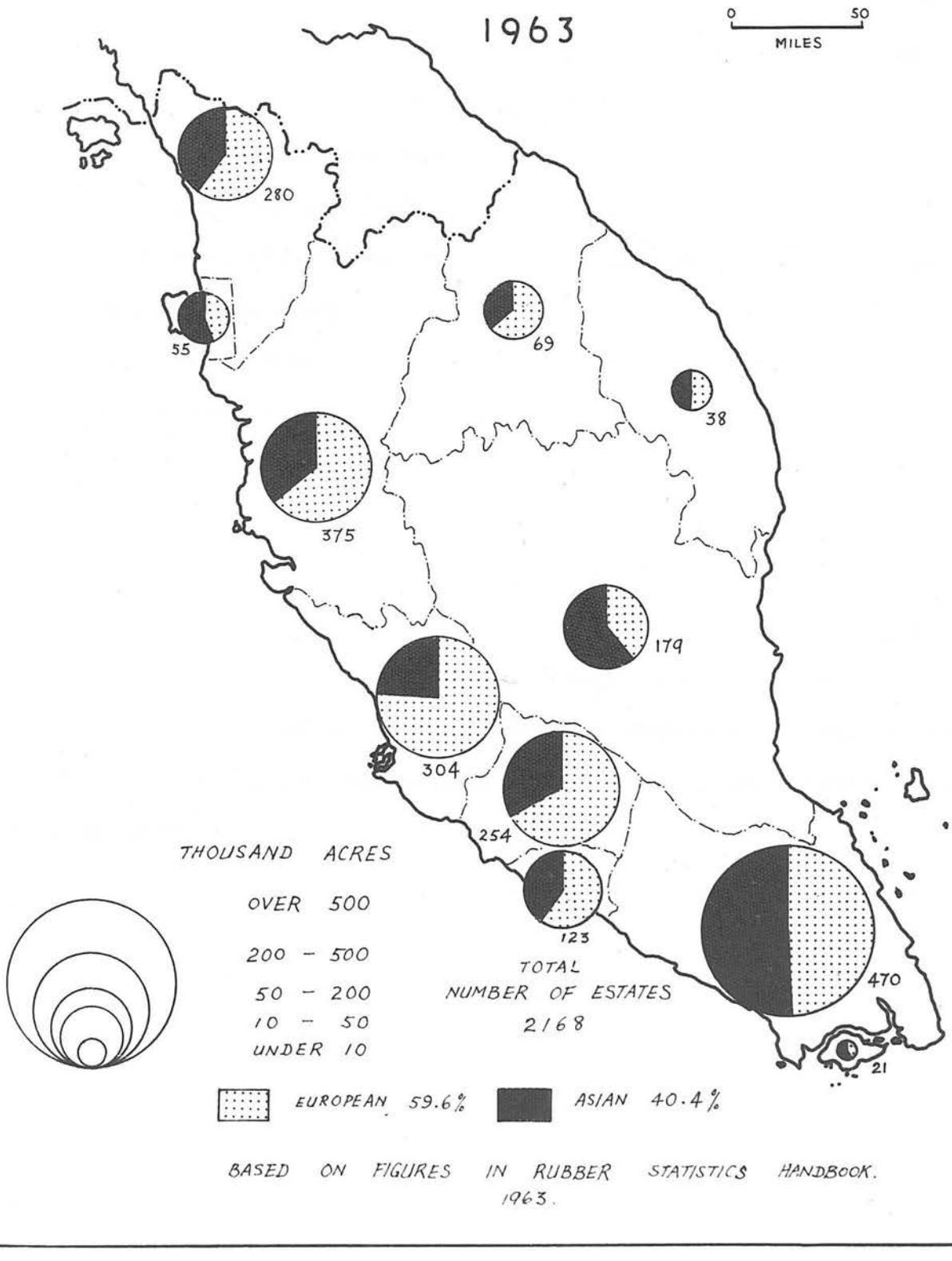
Table 3.3. Size and Ownership of rubber estates in Malaya, 1963.

Size of Estates (acres)	European		Asian		Total	
	No.	Acreage	No.	Acreage	No.	Acreage
Under 500	38	9,923	1,335	259,979	1,373	269,902
500 to 999	62	46,875	202	145,325	264	192,200
1,000 to 1,999	151	222,017	112	149,715	263	371,732
2,000 to 2,999	83	207,442	28	67,680	111	275,122
3,000 to 4,999	82	322,033	15	56,897	97	378,930
Over 4,999	49	339,585	11	97,824	60	437,409
Total	465	1,147,875	1,703	777,420	2,168	1,925,295

Source: "Rubber Statistics Handbook 1963" p. 29. Table 9.

FIG 19

RUBBER PLANTED IN ESTATES BY RACE AND STATES 1963



BASED ON FIGURES IN RUBBER STATISTICS HANDBOOK. 1963.

As table 3.3 shows, most of the European estates are between 1,000 and 5,000 acres in size, whereas most of the Asian estates are of less than 500 acres. The average size of European estates in 1963 was 2,450 acres, while Asian estates, only 450 acres. In general, Europeans own the largest estates, Chinese the medium-sized and Indians the smallest. Malays own less than 2 per cent of the total estate acreage.

The distribution of rubber estates is shown in Fig. 19. Nearly 91 per cent of the estates are concentrated in western Malaya from Kedah in the north to Johore in the south. This belt referred to as the Tin and Rubber Belt, varies in width from five to forty miles, and covers the coastal plain, inland freshwater swamps and the foothills up to an altitude of about 500 feet. In 1963, Johore contained 28.3 per cent of the rubber acreage, Selangor 16.1 per cent, Negri Sembilan 14.2 per cent, Perak 13.3 per cent, Kedah and Perlis 11.2 per cent, Malacca 5.8 per cent, Penang and Province Wellesley 1.4 per cent, Singapore 0.3 per cent,and the rest 9.4 per cent is distributed in the east coastal state of Pahang, Trengganu and Kelantan.

There is a lack of accurate statistics with regard to the smallholding sector of the Malayan rubber industry. The available statistics indicate that of the total 2,145,000 acres of smallholdings in 1963, roughly 50 per cent are Malay-owned, 30 to 40 per cent Chinese-owned, and the remainder are owned by Indians and others. About 15 per cent of the total smallholding acreage is in the eastern States of Kelantan, Trengganu and Pahang; the remainder is distributed along the Tin and Rubber Belt of western Malaya. Within the smallholding category there are two types of holding differing from each other in size. The larger of these is the medium-holding which

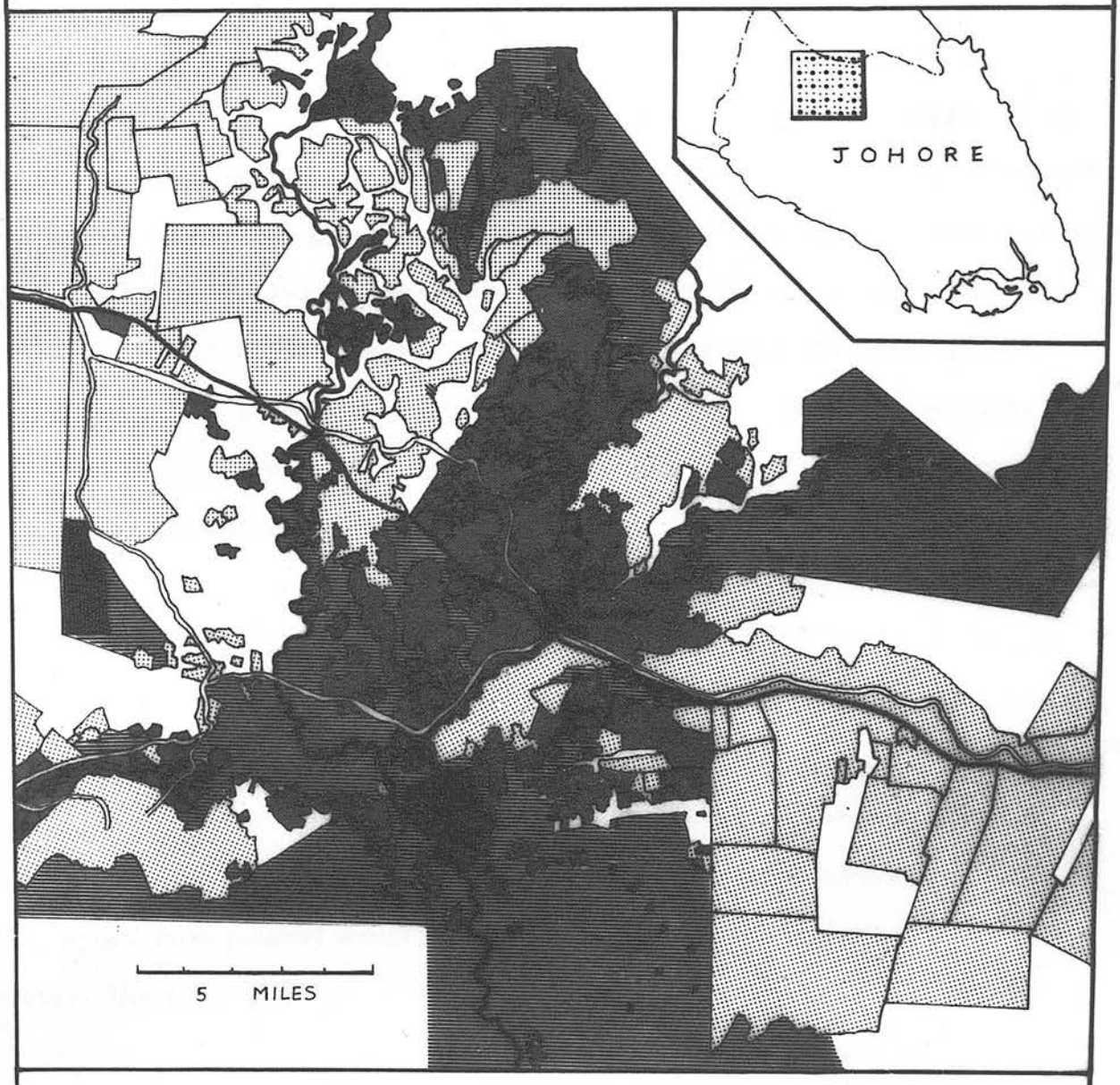
ranges from 25 to 100 acres, and the smaller is the peasant-holding which is less than 25 acres. About 80 per cent of the total smallholding area belongs to the peasant-holding type.

The distinction between the two main types of rubber holdings, estates and peasant-holdings, does not lie in differences of size alone. "The limits of an estate are usually well-defined. It generally presents a picture of orderliness, with the rubber trees growing in neat rows, and the undergrowth kept down by constant cutting. Some estates have little or no undergrowth and in this respect resemble the orchards of temperate lands in appearance. Each estate is served by an internal system of roads or laterite tracks radiating from a focal point (marked by the processing factory) to all parts of the holding, with pathways from tree to tree. There is also direct connection between the processing factory and the nearest main road or railway line. Occupying a focal position in the estate is a group of buildings composed of the manager's house, the processing factory and smokehouse, and the labourers' quarters. One of the main differences in the functioning of an estate as opposed to a peasant-holding is the source of labour. Labour is hired, either directly or by contract. There is also a division of labour within an estate - one group being engaged in tapping and latex collection, another in the preparation and processing of latex, a third in packing the finished rubber, and minor groups in weeding and general upkeep of the estate." Forty-eight per cent of the 286,300 labourers employed in estates in 1963 were Indians, 29 per cent Chinese and 23 per cent Malays and others. Fifty-two per cent of them were male, 42 per cent female and the remaining 6 per cent young persons.(2)

---

(2) See "Rubber Statistics Handbook 1963" p. 91, Table 47.

FIG 20
LAND USE IN SEGAMAT DISTRICT, JOHORE



ESTATE HOLDINGS
SMALL HOLDINGS
BOUNDARY OF RUBBER HOLDINGS
RAILWAY
RIVER
OTHER RESERVE
MALAY RESERVATION
UNALIENATED STATE LAND
ROAD
TOWN

BASED ON LAND UTILIZATION MAP OF MUAR DISTRICT, JOHORE. SURVEY DEPT. 1953.

The peasant-holding has a very different external appearance from that of the estate. "The rubber trees in a peasant-holding are often inter-planted with fruit, coconut, or other trees and bushes. The rubber trees do not always form continuous stands but may be in isolated clumps separated by other vegetation. Beyond the environs of the peasant's house, the mixed stand of rubber and other tree crops usually gives way to a pure stand of rubber growing in the midst of tall undergrowth and rubber seedlings which have taken root from fallen seed. This pattern of mixed stands facing the road, river or railway and pure stands in the interior is widespread throughout Malaya. Peasant-holding of this kind may stretch for many miles on both sides of a line of communication, with no clear boundaries between individual holdings. (Fig. 20). The processing shed is usually near the house and consists of nothing more than an open-sided thatched structure over a mangle or roller. There is no division of labour, the peasant and his family performing all the tasks of tapping, collecting, processing and drying the rolled sheets. The dried sheets are transported by bicycle and sold as low grade rubber to the nearest rubber dealer, who is usually also the local shopkeeper.*

Apart from general world market prospects and the competition of synthetic rubber, the future of the rubber industry will depend mainly on increased efficiency and yields. One of the principal means by which yields are being increased is by the use of high-yielding planting material, either budgrafts or clonal seedlings. During the period of the Rubber Restriction Scheme new planting was prohibited except for limited experimental and other purposes, but a certain proportion of replanting of existing rubber areas was allowed. These restrictions were somewhat relaxed in 1939, but

---

* See Ooi Jin-Bee, Op. Cit., PP. 210-218.

were not abolished until 1948. Before then many of the more efficient estates had undertaken a fair amount of replanting allowed by the provisions of the scheme.

Table 3.4 shows the acreage planted and tapped on estates between 1953 and 1963. A significant change of the acreage under the high-yielding material and unselected seedlings had been made during the last fifteen years. Nearly double the acreage tapped in 1963 was under high-yielding material compared with ten years ago.

Table 3.4. Acreage planted and tapped on estates. ('000 acres).

	Planted Acreage		Tapped Acreage		
	Mature	Immature	High-yielding Material	Unselected seedlings	Total
1953	1,727	303	430	1,185	1,615
1963	1,372	553	802	492	1,294

Source: "Rubber Statistics Handbook" 1962 p. 32. Table 25
and 1963 p. 46. Table 25.

Efficiency depends not only on the use of better planting material, but also on proper soil management and the age of trees. Many of the estates before the war adopted practices such as clean weeding which led to soil erosion and deterioration. There has, however, been a considerable improvement during recent years, and the more efficient estates adopt soil conservation practices such as the planting of cover crops. Detailed statistics showing the age of replanting and new planting on estates in Malaya is shown in table 3.5.

Table 3.5. Area planted and replanted on rubber estates. ('000 acres).

Year	New Planting	Replanting	Total
1930	13.8	N.A.	N.A.
1940	19.9	49.0	68.9
1950	5.8	44.0	49.8
1955	10.0	57.6	67.6
1960	21.7	75.2	96.9
1961	17.7	70.5	88.2
1962	10.0	63.1	73.1
1963	8.7	58.7	67.4

Source: "Rubber Statistics Handbook" 1962. p. 20 Table 13
and 1963. p. 25 Table 13.

According to the Report of the Mission of Enquiry into the Rubber Industry of Malaya,[3] at least 3 per cent of the total estate area should be replanted annually for the long-term maintenance and improvement of the industry. As table 3.5 shows, this proportion has been achieved since 1955.

The average yield of rubber on estates in 1963 was about 780 lb. per tapped acre. This average conceals, however, marked differences in actual yields - varying from as little as 300 lb. per acre on estate which has less than 20 per cent of the total acreage planted with high-yielding material, about 600 lb. per acre on 50 per cent planted with high-yielding material and over 1,000 lb. on estates of 100 per cent planted with high-yielding material.[4] It is theoretically possible to obtain yields of as much as 2,500 lb. per acre per annum from improved strains, but average yields are lowered by the

(3) See R.F. Mudie (ed.) "Report of the Mission of Enquiry into the Rubber Industry of Malaya". Kuala Lumpur 1954. p. 9.

(4) See "Rubber Statistics Handbook 1963" p. 49. Table 28 and p. 46, Table 25.

fact that a certain proportion of unimproved rubber reduces the average yields obtained. Also, as has been pointed out that improved strains alone will not give such high yields except in ideal soil conditions.

Yields on smallholdings do not differ markedly from those on the average estates. The average smallholder's yield per planted acre was 442 lb. in 1960, 449 lb. in 1961, 440 lb. in 1962 and 445 lb. in 1963.

It is probable that the restrictions on new planting under the Rubber Restriction Agreements weakened the position of the smallholdings, who were generally unable to undertake the cost of replanting on the limited areas allowed. Table 3.6 shows the amount of new planting and replanting by smallholdings in recent years:

Table 3.6. Area planted and replanted by smallholdings. ('000 acres).

Year	New Planting	Replanting	Total
1930	9.0	N.A.	N.A.
1940	3.5	14.0	17.5
1950	3.6	3.5	7.1
1955	8.1	25.3	33.4
1960	25.1	69.5	94.6
1961	67.4	57.3	124.7
1962	82.5	69.2	151.7
1963	100.3	82.9	183.2

Source: "Rubber Statistics Handbook" 1962 p. 20, Table 13 and 1963 p. 25, Table 13.

As table 3.6 shows, replanting by smallholdings before 1950 has been on a smaller scale than replanting by estates, in relation to their respective planted areas. As a result, the average age of smallholders' rubber is

probably higher than that of the estates. According to figures prepared by the Rubber Smallholdings Enquiry Committee,(5) of the total smallholders' area of approximately 1,400,000 acres in 1952, about 375,000 acres, or 26.7 per cent was more than 40 years old, 562,000 acres, or 40 per cent, was between 30 and 40 years old, 338,000 acres, or 24.1 per cent was between 20 and 30 years old, and only 127,000 acres or 9.1 per cent, was less than 20 years old. In other words, two-thirds of the rubber smallholding area in 1952 was more than 30 years old. Although the actual age limit beyond which rubber trees will not yield rubber is not definitely established, yields tend to fall after about 25 years. Also, the older trees are generally of indifferent stock, and are low yielding in relation to the improved material now available.

The Federation Government in the beginning of 1951 imposed a sliding scale cess on the export of rubber for the purpose of building up a fund to finance replanting. In March, 1952, an additional cess of 4.5 Malayan cents per pound was introduced. Under the Rubber Industry (Replanting) Fund Ordinance of 1952, two funds were set up: Fund A, for estates, and Fund B, for smallholdings. The yields of the cesses are paid into the two funds in proportion to the respective output of estates and smallholdings.

A sum of M$ 168 million was set aside for the period 1955-1962 to aid estates to replant or new plant up to 21 per cent of their total acreage and a grant of M$ 400 is paid per acre. Estates are credited with such sums in Fund A as it is estimated that they have contributed in payments of the sliding scale cess - allowance being made for administrative costs - and will be repaid such sums totally if they can show either that all their acreage is replanted

---

(5) See "Final Report of the Rubber Smallholdings Enquiry Committee" (Federation of Malaya: Federal Legislative Council Paper No. 8 of 1952).

with improved rubber or that they have undertaken an approved amount of replanting since 1946. Of the additional cess of 4.5 cents per pound, which was imposed specially to assist smallholdings to replant, that portion credited to estates is returned to them automatically. In 1952 interim arrangements were approved to enable advances for replanting to be made to smallholdings known to be eligible to participate in Fund B, pending the promulgation of a more detailed scheme for all smallholdings. It was also agreed to levy the 4.5 cents cess on rubber whatever the export price, and a total of M$ 112 million was allowed to assist smallholders. This could be used to assist replanting or to finance Block New planting Schemes and to establish nurseries and seed gardens for the supply of the most up-to-date high yielding planting material and a grant of M$ 750 is paid per acre.

Due to the need of the rubber industry to continue to replant in order to face the challenge from synthetic rubber, it was decided to make a further financial grant of M$ 200 million to the industry to help it to continue its replanting programme. By 1967 both of these schemes will have been completed.

Owing to the stimulation of such grants for assisting the replanting, the acreage under replanting on smallholdings have been made a significant progress since 1955. (See table 3.6). The large increase in smallholdings new-planted acreage since 1960 was due to the various schemes undertaken by Federal and State Land Development Authorities, private enterprises and individuals under the Rural Development Programmes.

It is estimated two-thirds of the total acreage on smallholdings are still under unselected seedlings, whilst about 70 per cent of the estate holdings are planted with high yielding material in 1963.

The main type of rubber produced by the estates is ribbed smoked sheet, it accounts for about 57 per cent of the total rubber output of the estates in 1963. But increasing quantities have been produced as latex during recent years. In 1963, processed latex production amounted to 47,840 tons or 14 per cent of the total rubber output of the estates. Other forms of rubber produced include air dried sheets, sole crepe, specially softened rubbers and manufactured scrap and lump. Whereas, almost the whole of smallholders' rubber output is in the form of ribbed smoked sheet, which can be simply prepared without expensive equipment.

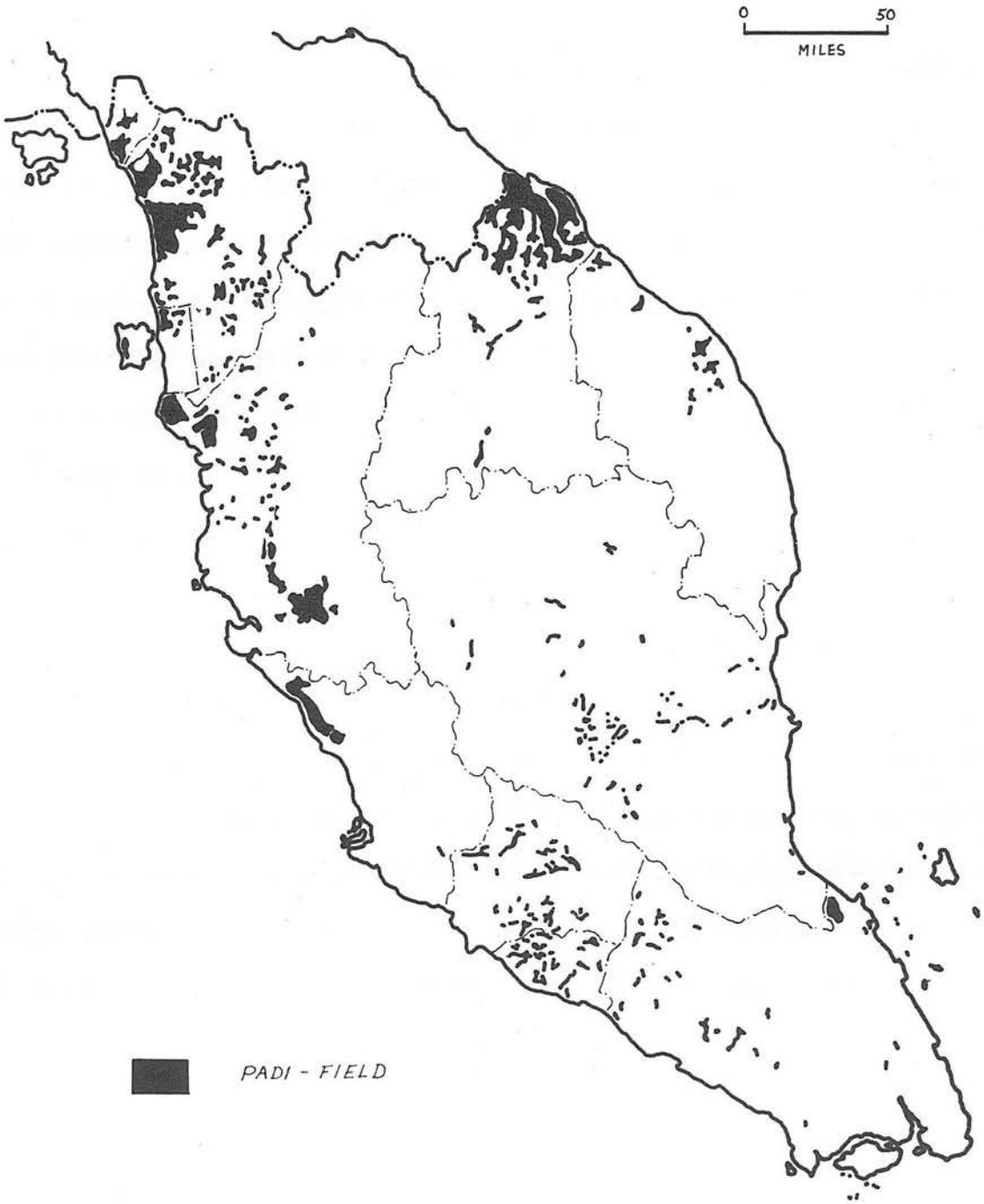
In short, rubber is by far the most important crop in the Federation of Malaya. Its importance in the Federation's economy is shown by the fact that it accounts for about two-thirds of the cultivated area and for about 53 per cent of the value of the Federation's exports in 1962. About 2 million people or 30 per cent of the total population are directly dependent on rubber while in recent years about 11 per cent of Federal Government revenues were derived from duties levied on the export of rubber.

Rice. Rice is the major food crop in the Federation and as a constituent of the agriculture sector, it is next in importance to rubber. The production of padi accounts for almost one million acres or 17 per cent of the total cultivated area. It is usually grown in very smallholdings and cultivation is broadly speaking of the subsistence type. It is almost entirely a Malay interest. Ninety-six per cent of the total working population of 398,295 engaged in padi farming in 1957 were Malays, 2 per cent were Chinese and the remainder Indians and others*.

---

* See Federation of Malaya, "Census of Population" 1957.

FIG 21 LOCATION OF PADI FIELDS



BASED ON MALAYA LAND UTILIZATION MAP NO. 29 - 1953.

Rice technology in Malaya may be divided into "wet" cultivation, in which the crop grows in a partially controlled water environment at least part of the time, and "dry" or "upland" cultivation. Wet-rice cultivation is the most important of the two systems and is cultivated in flooded fields.

The main padi areas are located in the northern part of the Peninsula, north of latitude $4^{\circ}30'$N. There is a small but distinct climatic seasonality here which makes it more suitable for padi cultivation than areas lying nearer the equator.@ More than 70 per cent of the total production of padi comes from these two northern regions: the north-east coastal plains centered around the Kelantan Delta, and the north-west coastal zone running from Perlis southwards to the Krian plain of Perak. (Fig. 21).

The first one is largely a subsistence region and little of the padi produced goes beyond the State boundaries. Up to the beginning of the present century the region has been self-sufficient, producing enough to feed the population. But the increase of population in the last sixty years and the shortage of land for conversion into padi fields have turned it into a rice-deficient area, and a small amount has to be imported annually to supplement the rice produced within Kelantan.ø In the second region, the extension of modern drainage and irrigation facilities to a large part of the region, and the opening up of new lands, notably the Krian Irrigation Area, have made this into a rice-surplus area, and the annual surplus goes to supplement the requirements of a part of the non padi-growing Malayan population.

@ See Dobby, E.G.H., "Southeast Asia" pp. 106-111, and also Journal of Tropical Geography Vol. 10, June, 1957, also H.W. Jack, "Rice in Malaya" Dept. Agric. Bulletin, No. 35 (1923).

ø See T.B. Wilson, "The economics of padi production in North Malaya", Pt.I (1958).

Of the other large coastal plains lying south of the 4°30'N. latitude, that of Perak is in the course of development. The Sungei Manik Irrigation Scheme, located between the Batang Padang and Kinta Rivers in Lower Perak, has been in the process of gradual colonization since the 1930's. Up to date four stages covering a total area of 20,000 acres have been developed and colonized.@ The Trans-Perak Irrigation Project located in the Bruas-Sitiawan plain is at the moment in the planning stages. An area of 180,000 acres will be converted into padi lands when the scheme is eventually completed. In Selangor, part of the 500 square miles of swamps which lie between the Bernam and Selangor Rivers has been turned into padi fields.Ø This developed section, known as Tanjong Karang, is a coastal strip some 3 miles wide and about 27 miles long, and is bounded by a coastal bund on the west and the main irrigation canal on the east. The percentage increase of production in this region is the highest among the different states of Malaya. (See Table 3.7). In eastern Malaya, the Pahang and Rompin-Endau deltas remain undeveloped except for small, widely scattered fields and kampong strung out along the levees.

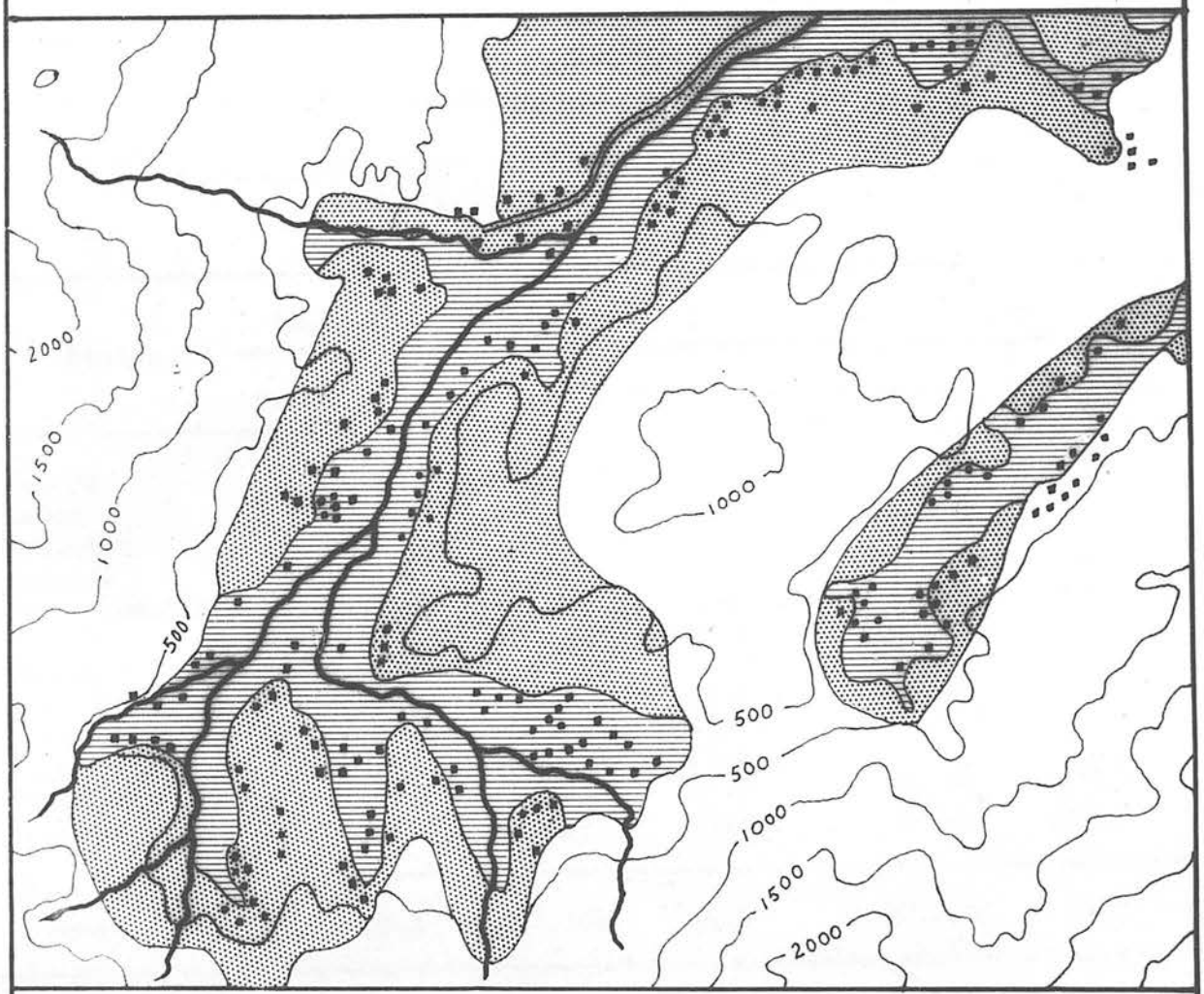
In addition to the large coastal plains padi is also grown in inland valleys throughout the Peninsula, in small widely scattered fields in rolling country and foothill regions. A typical landscape is one of padi fields occupying the flat, narrow valley bottom on either side of a river, with

---

@ See Federation of Malaya, "Report of the rice production committee" Vol. I, and "Final report of the rice committee" (1956).

Ø See Federation of Malaya, "Census of Agriculture" 1960, and also "Annual report of the Department of Agriculture" 1960 and 1962.

FIG 22
PEASANT LANDSCAPE IN A VALLEY LOCATION



FOREST
RUBBER
RICE
RIVER
ROAD
HOUSES

1 MILE

BASED ON MAP OF THE FEDERATION OF MALAYA SURVEY DEPARTMENT. (KUALA PILAH DISTRICT, NEGRI SEMBILAN) 1953.

peasant houses strung out along the break of slope, and tree crops of rubber, coconut and fruit occupying the slopes. (Fig. 22). The padi is grown entirely for subsistence, while the tree crops are grown partly for consumption (in the case of coconut and fruit) and partly for sale.

Table 3.7. Comparison of post-war production of wet padi with 1940-41 season. (pounds).

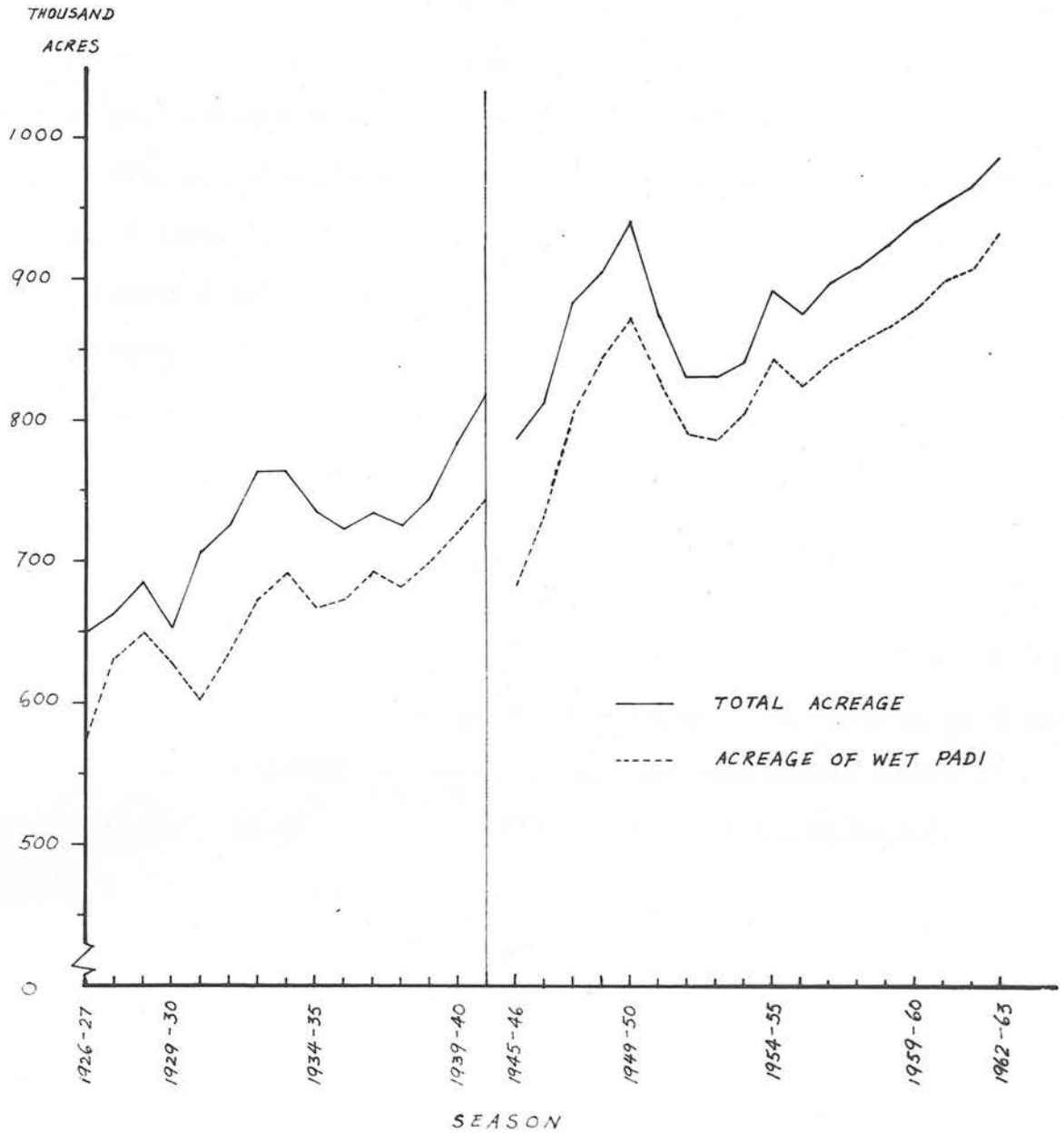
States	1940-41	1956-57		1962-63	
	Production	Production	% increase	Production	% increase
Johore	4,973	10,455	110.2	14,834	198.3
Kedah	564,771	635,337	12.5	741,574	31.3
Kelantan	187,550	246,803	31.6	346,881	85.0
Malacca	44,066	59,489	35.0	74,911	70.0
Negri Sembilan	43,221	54,555	26.2	81,693	89.0
Pahang	21,465	50,053	133.2	54,118	152.1
Penang & Pr. Wellesley	54,774	77,039	40.7	95,810	85.1
Perak	97,933	196,633	100.8	239,652	144.7
Perlis	72,262	156,979	117.2	174,261	141.1
Selangor	27,306	115,164	321.8	139,451	410.7
Trengganu	26,729	51,677	93.3	84,986	218.0
Total	1,145,049	1,654,184	44.5	2,048,172	78.9

Source: "Rice Supplement to Monthly Statistical Bulletin of the Federation of Malaya 1963" Table 5.

Although padi is a cereal capable of giving sustained yields without exhausting the fugitive fertility of tropical soils, its cultivation in Malaya is at best a risky occupation because of the unfavourable climate, which is more suited to the growing of tree crops than of annuals, the lack of water control over wide areas and the depredations of pests and diseases.

FIG 23

ACREAGE PLANTED WITH PADI 1926 – 1963



BASED ON FIGURES IN RICE SUPPLEMENT TO MONTHLY STATISTICAL BULLETIN OF THE FEDERATION OF MALAYA 1963.

Moreover, the low economic returns from padi growing compare unfavourably with the returns from almost every other form of agriculture, particularly with rubber cultivation. The smallholder can obtain more rice by purchasing it with the proceeds from an acre of rubber than by growing the rice directly from an acre of land. For these reasons padi planting has never been a popular occupation with the Chinese, in spite of the fact that many of them were padi growers in China before they migrated to Malaya.

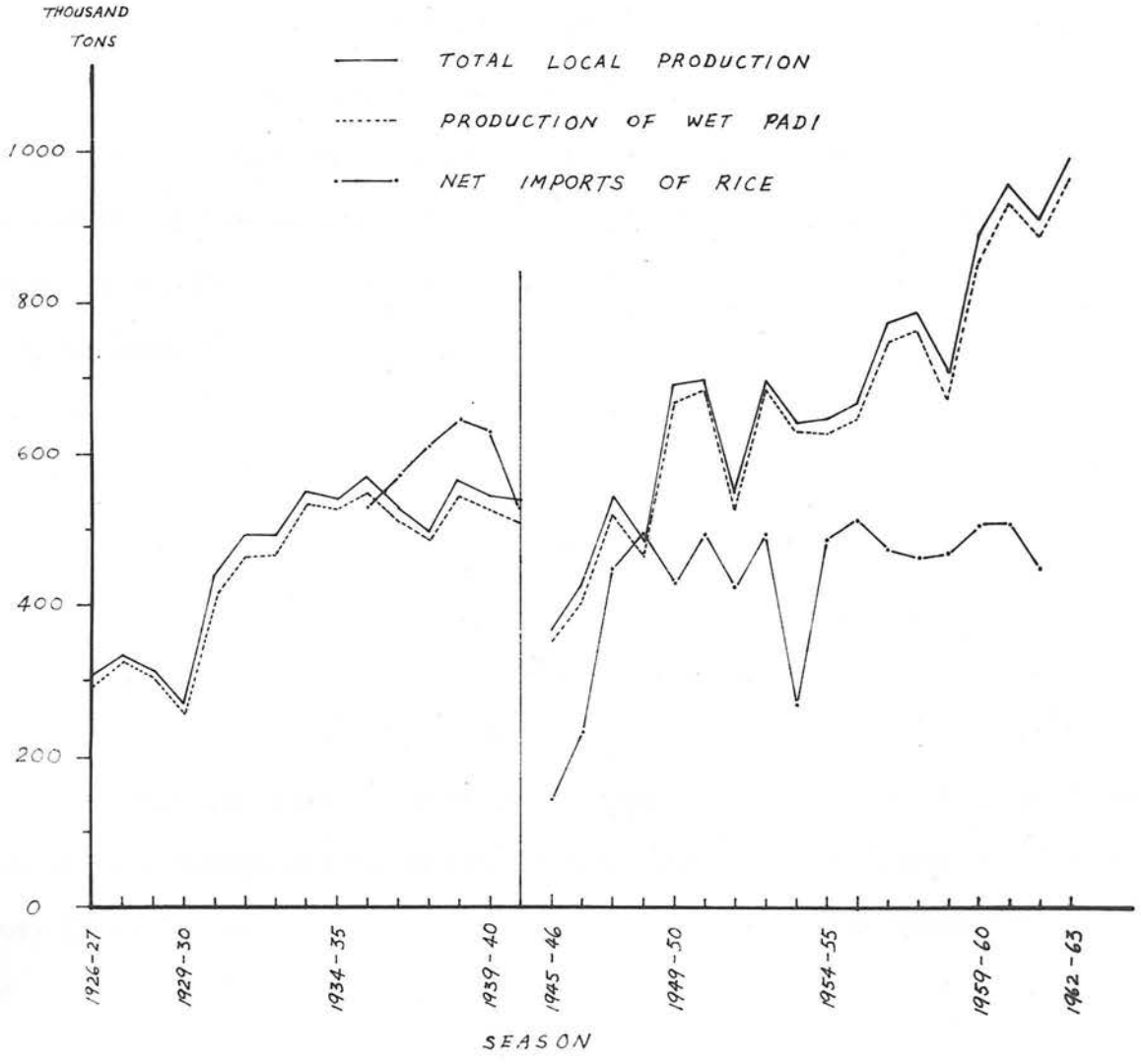
Yet, on the whole the padi acreage has increased from an average of 649,690 acres in 1926-27 to 988,000 acres in 1962-63. (Fig. 23). This represents a net expansion of more than a quarter of a million acres since the 1920's. The increase has come about mainly through the efforts of the Government to lessen the country's dependence on rice imports from other parts of South-East Asia. Up to the end of the First World War the large profits from rubber were responsible for the general disinterest in the growing of other crops. The demand for rice by the rapidly increasing population was met by imports from the rice-granaries of Burma and Thailand. Between 1917 and 1921, however, failures of the rice harvests in Burma and India doubled the price of rice, at the same time rubber prices slumped, and the Malayan Government had to spend one-third of the accumulated financial surplus balance of earlier years on subsidizing rice imports. Home growing of padi was stimulated and production which had stood at 178,000 tons in 1918-19 rose to 317,415 tons in 1926-27 and to 440,000 tons in 1930-31.

---

* See H.A. Tempany, "The economics of the rice situation", M.A.J., Vol. XVIII, 1930.

FIG 24

SUPPLY POSITION OF RICE 1926 — 1963



BASED ON FIGURES IN RICE SUPPLEMENT TO MONTHLY STATISTICAL BULLETIN OF THE FEDERATION OF MALAYA. 1963.

The great Depression of the 1930's brought home with renewed force the vulnerable position of Malaya with regard to her staple food supply and to the over-dependence on rubber and tin for her economic health. A new policy of self-sufficiency was adopted at this critical period. Following the recommendations of the Rice Cultivation Committee of 1931, the Drainage and Irrigation Department (D.I.D.) was established in 1932, and its activities in providing controlled water supplies, in draining swampy coastal lands, and in opening up new land as padi settlement areas up to the beginning of the Second World War did much to turn governmental hopes to partial reality. In 1935-36 production of padi increased to 569,683 tons. (Fig. 24).

The post-war policy of the Government is "to make the Federation of Malaya as self-supporting in the production of rice as is economically possible within the limits imposed by local circumstances, e.g. the availability of land, labour, equipment, settlers and finance".

In spite of the increase in net acreage and production in the post-war period, Malaya continues to depend upon outside sources for nearly half of her rice requirements. The output of padi is just keeping pace with population growth, and Malaya has to import from 141,000 to 510,000 tons of rice each year (Fig. 24) to feed the rest of the population. According to the Director of the Drainage and Irrigation Department, Malaya's rice requirements will rise by 15,000 tons annually at the present rates of population growth. These requirements can be met by developing new land at the rate of 30,000 acres each year. "But the D.I.D's programme for 1955-59 planned for the development of 70,000 acres of new padi land was enough to support the population increases of only two years, it was insufficient to provide for

the extra months over the remainder of the period." Especially because of the limited acreages of potential padi land, the country will have to depend for part of its food supply in the long run on increased yields as a means of increasing rice production rather than on the opening up of new padi lands.

Experimental research carried out by the Department of Agriculture indicates that over all the padi lands of Malaya there is a "bar" beyond which padi yields cannot be raised in spite of liberal applications of manure and fertilizers and of good drainage and irrigation. This bar varies from 2,200 to 3,025 lb. per acre. These maximum potential yields, however, are low compared with those actually attained in sub-tropical and warm-temperate regions. Japan, for example, grows twice as much rice per acre as the average Asian country in recent years.* Whilst, Italy had an average yield of 3,750 lb. per acre in 1959-61, and Spain of over 4,000 lb. per acre.[⊕] In contrast, the actual yields in Malaya while among the highest in South-East Asia are far below the maximum potential yield of up to 3,025 lb. per acre, although some progress has been made during the last few years. (Table 3.8).

Table 3.8. Average yield per acre of padi.

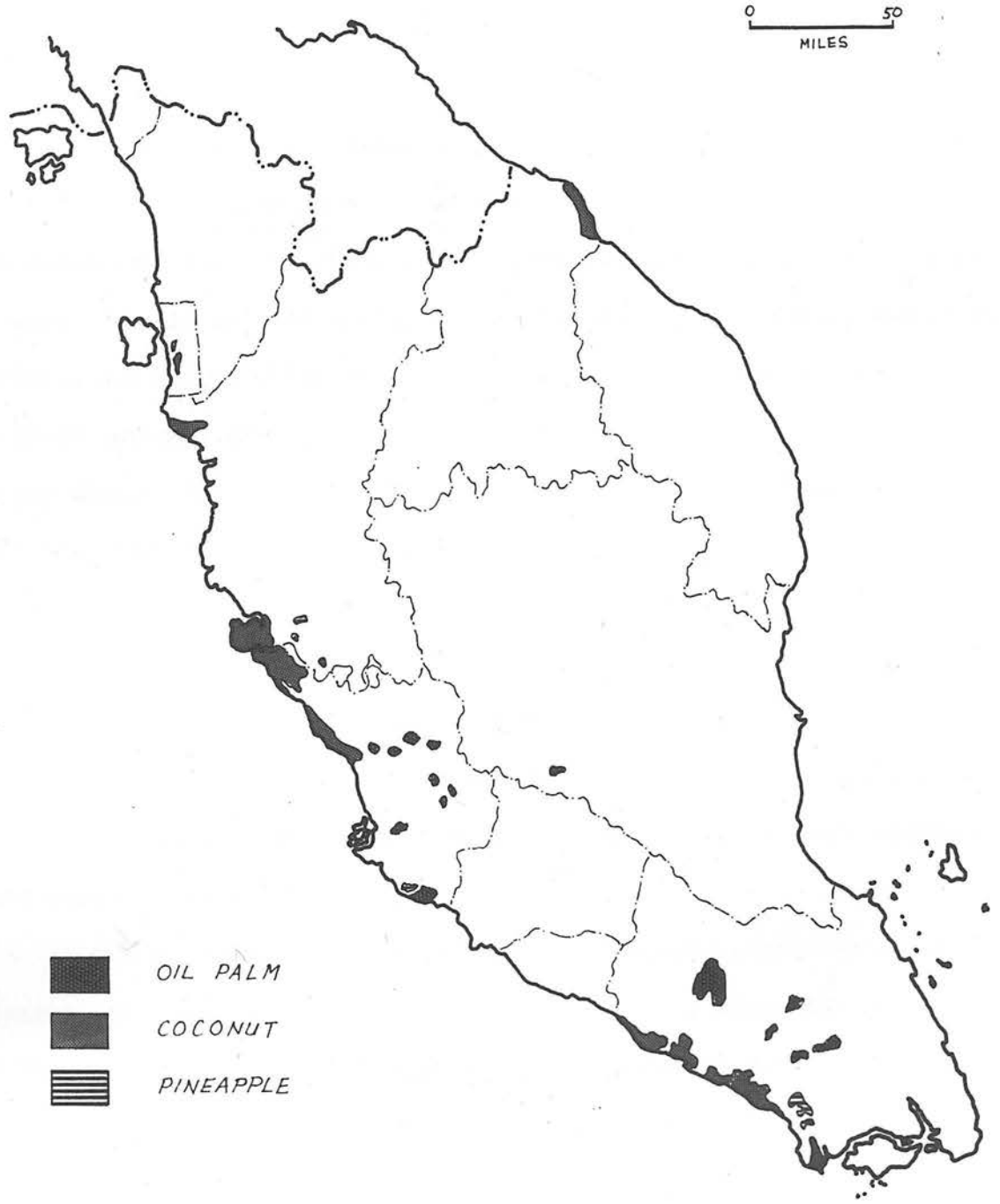
Season	Wet Padi	Dry Padi
1926-27	1159.2	806.4
1936-37	1663.2	767.2
1946-47	1243.2	616.0
1956-57	2004.8	1041.6
1957-58	2004.8	1103.2
1958-59	1831.2	1136.8
1959-60	2195.2	1232.0
1960-61	2329.6	1204.0
1961-62	2189.6	1097.6
1962-63	2324.0	1164.8

Source: "Rice Supplement to Monthly Statistical Bulletin of the Federation of Malaya 1963" Table 2A.

⊕ See F.A.O. "Annual Report" 1961.

* In the case of Japan, the raising of agricultural productivity involved a number of major changes. There was firstly the need for changes in technology, e.g. the introduction of new methods of production which made high yields competible with small scale cultivation. Secondly, there was the need to provide the farmer with the social economic incentives to increase production, e.g. by introducing far reaching changes in the system of land tenure, land taxation and the impact of monetary forces. Thirdly, there was the need to develop and transmit the knowledge of technology to the farmers, e.g. by the creation of an elaborate net-work of research institutions and of extension and educational programmes. See also Lew Sip Hon, " Some economic aspects of agricultural diversification in Malaya ", M. A. J., vol. 45, no. 1, (1965).

FIG 25
LOCATION OF COCONUT OIL PALM & PINEAPPLE



BASED ON MALAYA LAND UTILIZATION MAP (1 : 760,320)
SURVEY DEPARTMENT NO. 29 - 1953.

Coconuts

The second most important cash crop, the coconut, accounts for less than 3 per cent of the total estimated gross national product of Malaya, but it occupies nearly 10 per cent of the total cultivated area. Like rice, the production of coconuts is essentially from smallholdings. Of the total acreage of about 515,000 acres under coconuts only about 16 per cent is in estates of 100 acres and over. A large part of production is consumed locally in the form of nuts, coconut oil and toddy, so that production statistics, except for estates, are mainly estimates. It is believed that smallholders account for about 70 per cent of Malayan copra production, and estates for the remaining 30 per cent. Copra has become an important export in Malaya since 1870. In 1963 the value of copra in Malaya's exports was M$ 13 million and of coconut oil M$ 22 million.

Coconut planting is found all over Malaya, but the main concentrations are along the coastline on both sides of the peninsula. (Fig. 25). The best crops are obtained from the heavy alluvial clays on the west coast, and less satisfactory yields are obtained from plantations on the sandy ridges of the east coast.

At the beginning of the nineteenth century, coconuts were cultivated in plantations in Penang and Malacca. Planting began along the south-east coast of Singapore soon after it became a British colony in 1819. The nuts were sold for domestic use, and it was not until about 1850 that copra from Malaya was exported to Europe.

The rapid rate of extension of the coconut acreage in Malaya was checked temporarily during the first World War, but the Western industrial demand for

vegetable oils for the manufacture of margarine, lard substitutes, cooking and edible oils, and soap and toilet preparations stimulated further planting at the end of the war. By 1935 the total area under coconut had increased to 606,000 acres.

Some areas of coconut were cut down during the Japanese occupation of 1941-45, and many of the larger estates suffered badly from neglect and had to be rehabilitated before normal production could be resumed. In 1963 the total area under coconut was 515,000 acres, of which 80,000 acres were in estates and the remainder in smallholdings of under 100 acres each. "Smallholdings where coconut forms the main cash crop are usually between 1 and 8 acres in size. The crop is also grown in mixed stands."*

Most of the large coconut holdings are located in western Malaya. Nearly all of the estates of 1,000 acres and over are owned by Europeans, and worked by a labour force almost entirely Indian. Nearly all of these large estates are located in Selangor, Perak, Pahang and Province Wellesley. The estates of less than 1,000 acres are largely Asian. Johore, Selangor and Perak have large areas under coconut, the bulk of the Johore acreage being composed of smallholdings rather than estates as in the other two States. One-quarter of the total Malayan acreage is found along the coastal plains of west Johore. Smallholdings also predominate along the eastern coast of Johore and in the Eastern States of Pahang, Trengganu and Kelantan.

The coconut palm is a tropical plant which requires a mean annual temperature of about 75-85°F for successful growth. "It can be cultivated anywhere in the Peninsula up to an altitude of about 2,000 feet, but it will not fruit when cultivated on steep slopes with gradients of more than one in fifteen.

---

* See Ooi Jin-Bee, Op. cit., PP. 248-249.

The palm grows best in localities with heavy (over 75 inches a year) and evenly distributed rainfall and high humidities. In Malaya, commercial cultivation on the west coast and in the inland areas is limited to heavy clay soils, and it is only along the east coast that cultivation is on sandy soils.

The seedlings are raised in nursery beds until they are between five and seven months old, when they are transplanted to the fields. A dwarf palm reaches fruiting age in its fourth year and produces its best yields towards its fifteenth year, while a tall variety begins to fruit in its fifth year and reaches its best towards the thirtieth year. Yields vary considerably according to site and care of cultivation. In the better estates yields vary from 1,600 to 2,000 lb. of copra per acre with the best estates producing up to 3,300 lb. per acre. Yields in smallholdings may be as low as 500 lb.

The marketable products are fresh nuts, copra, coconut oil, copra cake, coir, toddy and coconut shell by-products. The most important of these is copra, the dried kernal of the nut. Smallholders usually prepare copra by sun-drying the kernel, but kiln-drying is the normal method of preparation in estates."

There is no record of the number of nuts gathered on smallholdings, but the number harvested on estates declined consistently from 199 million in 1955 to 165 million in 1960. There was a rise to 173 million in 1961, but the figure was down again in 1963, to 169 million.

It is in the smallholdings that the production decline is most acute as the figures of copra production demonstrate in table 3.9.

Table 3.9. Production of copra and nuts.

Year	Copra		Nuts harvested on Estates (million)
	Estates* (tons)	Smallholders (tons)	
1954	39,864	N.A.	194
1957	35,843	N.A.	192
1960	32,309	140,650	165
1961	33,841	127,644	173
1962	33,214	99,694	169
1963	32,219	N.A.	169

*Production for 1960 and previous years includes the estimated copra content of coconuts sold as such by Estates. Data for 1961 and subsequent periods relates only to copra produced on Estates.

Source: Monthly Statistical Bulletin of the States of Malaya, Nov. 1964. p. 19.

The effect of the decline in production is causing a scarcity in supplies for the Federation's widespread coconut oil milling industry, and has caused the country to switch from being a net exporter of copra to a net importer in the last few years. (Table 3.10).

Table 3.10. Net exports of coconut products.

(tons)

Year	Copra	Coconut Oil	Copra Cake
1940	-9,904	69,446	-1,215
1950	4,777	56,045	-31,105
1955	-25,216	70,009	-21,095
1956	-48,341	80,613	-25,280
1957	-28,523	64,824	-26,413
1958	-29,333	48,646	-26,998
1959	2,068	27,149	-26,854
1960	35,132	26,630	-26,082
1961	4,742	40,619	-28,916
1962	-5,085	31,856	-24,125
1963	-4,290	27,840	-19,588

- Minus quantities represent net imports.
Source: Monthly Statistical Bulletin of the States of Malaya, November, 1964, p. 19 Table 2.3 and 2.4.

The coconut oil industry has expanded steadily since the war, and net exports reached a high of 80,613 tons in 1956, but have since fallen to about 28,000 tons in 1963. The residue after oil extraction is marketed as copra cake, a valuable cattle and pig food. Production of cake averages over 40,000 tons a year. Besides copra, coconut oil and copra cake, Malaya also exports about nine million coconuts a year. Nevertheless, it is obvious that although coconuts are still the Federation's third largest crop, the coconut planting industry is in a state of alarming deterioration.

Oil palms. Like rubber, the oil palm was first introduced into Malaya in 1875, but it was not until 1917 that it was first grown on a plantation. The growing of oil palms is heading towards becoming one of the Federation of Malaya's leading industries in recent years. In 1963 about 176,000 acres were planted with oil palms, compared with 109,000 acres in 1954 and 78,000 in 1947.

In 1963, the production of palm oil was 125,600 tons compared with 72,700 tons in 1959 and 39,000 tons in 1947. Palm kernels production was also a record at 30,135 tons against 14,471 tons in 1954 and 5,737 tons in 1947. Except for about 6,000 tons of oil used by Lever Brothers (Malaya) Ltd. in their oil and soap factory in Kuala Lumpur, the rest of the Malayan palm oil and the entire production of kernels are exported. The oil palms industry contributed about 2.8 per cent by value of the total exports of the Federation in 1963.

These figures appear insignificant in relation to more than 50 per cent of the net exports value of rubber, but there is an accelerating trend towards switching from rubber to oil palms in replanting programmes. A significant development is that the Federal Land Development Authority has recently turned its attention to the development of oil palm growing by smallholders. It already has a pilot project in Johore of about 5,000 acres, and two other projects are being considered for East Coast areas.

The existing oil palm plantations are distributed in inland and coastal locations along western Malaya from central Johore to Perak. (Fig. 25). The Johore plantations are in rolling country, concentrated in three main areas - the Kluang area, Labis and Layang Layang. There is one large estate near Semana Halt in the Kuala Pilah district of Negri Sembilan. In Selangor the main areas are along the coast between Batu Laut and Kuala Sepang, to the south-east of Port Swettenham north of Batu Tiga between Klang and Kuala Lumpur, at Merbau Sepak, and on the upper reaches of Sungei Selangor. The Perak estates are on the right bank of the middle and upper reaches of Sungei Bernam, with part of these estates in Selangor territory, and south of the Perak River mouth. There is also one large estate in Mentara Halt, on the northern borders of Kelantan and Pahang.

Almost all of the existing oil palms plantations are on estates. The estates vary considerably in size, but the majority are between 1,000 and 5,000 acres. Most of the estates are owned by Europeans and the control of the industry is almost entirely in European hands. There are also some Chinese-owned estates, but most of them are small and the total acreage under Chinese ownership is insignificant.

The palm requires a warm climate, abundant sunshine and an annual rainfall of 60 inches or more. It is sensitive to drought and the rainfall must be evenly distributed throughout the year with no marked dry season. It grows best at altitudes below 1,000 feet. The Malayan climate is highly favourable to good palm growth.

The palm grows in a variety of soils, from moist, peaty coastal alluvium to the drier inland soils derived from sandstone and granite. Good drainage is essential in all cases. The best soil for the palm in Malaya is alluvial

loam overlying a friable clay subsoil which will allow for easy root penetration and at the same time retain soil moisture. Coastal and riverine alluvial soils which are properly drained support very good stands of the oil palm. The palms will not grow well on deep peat, on soils with impervious handpan layers, on very sandy soils, and on black soils with a high percentage of carbonaceous matter.

The palms are raised from seed in a nursery until they are from twelve to eighteen months' old, when they are transplanted to the field. On the field, it is usual to plant a leguminous cover-crop in order to suppress the growth of weeds, prevent soil erosion, and to keep the soil temperatures down.

Some progressive estates with well drained soil are capable of producing an average of over 1.5 tons of oil an acre annually. The yields are amongst the highest obtained anywhere in the world, and are much higher than is possible in West Africa. The palms usually reach bearing in from three to four years, attain the highest yields from about the eleventh year, and continue to produce until the 25th to 30th year. After that, harvesting becomes difficult and expensive as the palms grow to a height of 35 to 45 feet.

Oil palms have an advantage over rubber trees in that they commence yielding some three years earlier, replanting costs are less and the labour force required for maintenance and harvesting is smaller. On the other hand a much higher initial capital investment is required.

High quality oil of low free fatty acid content necessitates properly timed harvesting and processing the fruit within 24 hours. In order to achieve this an estate, or compact block of estates, must have its mill, with heavy complicated machinery and equipment. There must also be a carefully planned network of roads and estate railways designed to bring into the mill the fruit rapidly and without bruising.

A high technical standard is required of the staff and management. Despite the heavy capital expenditure, oil palm, in present conditions, provide a higher income per acre than is obtainable from rubber trees.

From the foregoing the reason for oil palm development being almost entirely confined to estates will be apparent.

Pineapple. Pineapple was introduced to the Far East by the Portuguese and the Spaniards from South America. It is widely grown throughout Malaya but only in Johore, Selangor and Perak are they cultivated for the canning trade. In 1888, some Chinese in Singapore began canning the pineapple as a "shop-house" industry. From this humble beginning, the Malayan pineapple canning industry has grown to be one of the largest fruit-canning industries in the Commonwealth.

The rise of the pineapple industry was closely linked with the expansion of rubber cultivation in the Peninsula. Pineapple was interplanted with young rubber to provide a cash income until the rubber reached maturity. As the rubber acreages increased large surpluses of cheap pineapples were available for canning, and canning factories sprang up in Singapore, Johore and Selangor. Before the Second World War, the Malayan pineapple industry produced about two and a half million cases (of 4 dozen $1\frac{1}{2}$ lb. cans) of tinned pineapples annually, as well as a fair proportion of fresh fruit.

Pineapples will grow well on well-drained peat soils. Although the area under pineapples as a sole crop increased from 3,000 acres in 1929 to about 40,000 acres in 1941, little attention was paid either to the question of suitable soils or to the improvement of quality. The Malayan product owed its popularity to its low price, resulting more from the cheapness of labour than from the efficiency of the industry, and its quality was usually inferior to the Hawaiian product. Thus, although Malaya accounted for 27 per cent of

world production and 80 per cent of the world export trade in canned pineapple in 1937, the industry suffered from serious weaknesses, such as inefficient methods of harvesting and marketing the fruit, and poor factory method.(6)

"During the war and the Japanese occupation, the cultivation of the canning pineapple was discontinued, and most of the land under pineapple reverted to secondary jungle, or was in any case so eroded that the plantations died and most of the canneries were denuded of machinery and abandoned. By the end of the war, the area under pineapple cultivation remained only 3,000 acres, and the industry was practically dead."

The rehabilitation of the industry was slow due to difficulties in the supply and marketing of the fruit.⊕ In 1947 the total exports of canned pineapple were 2,611 tons, valued at M$ 2.4 million, increasing to 17,391 tons in 1953 valued M$ 19.0 million and to 39,458 tons valued at M$ 29.4 million in 1963.

"The total area under pineapple in 1961 was 42,248 acres, of which 30,379 acres were devoted to fruit grown for canning. About half the acreage of pineapple grown for canning purposes was in estates, and the other half in smallholdings. The largest area is in Johore and Selangor. (Fig. 25). The area in which pineapple was cultivated as a sole crop formed 85 per cent of the total acreage. The elimination of the catch-crop system and the fact that many canneries have their own pineapple estates have brought some stability to the supply side of the industry. Pineapple is also grown for the local fresh fruit market throughout Malaya."*

---

(6) See G. E. Courtenay, "The Resuscitation of Malayan Canned Pineapple Industry", in Malayan Agricultural Journal, Vol. 30 (1947) pp. 183-190.

* See Ooi Jin-Bee, Op. cit., P. 259.

⊕ The smallholders place in the industry has been traditional in Malaya. He was the main supplier of fruit until 1952, and to-day, he remains an important source of supply. But the arrangement for marketing smallholders' fruit have been unsatisfactory for some time. The 1952 Regulations were designed to provide the rules under which packers shared the fruit when it was in short supply. These rules worked reasonably well up to 1955 for they served to bring order into buying when fruit was in such short supply that competitive bidding among packers might have prevented an equitable distribution. After 1956, the problem was that growers wanted a fair share of the market when fruit supplies were in excess of requirements and packers were unwilling to accept the fruit. Neither the Malayam Pineapple Industry Board nor the Pineapple Joint Industrial Council was effective in dealing with the problem. For details, see Federation of Malaya, "Report of the Commission to enquire into the position of the Malayan Pineapple Industry", Cmd. 19 of 1960.

Tea. Tea was first planted in the Peninsula in 1802 on the island of Penang, but in 1930 tea became established as an estate crop in the western State of Selangor. At the present time, the area under tea planting is mainly located in the Cameron Highlands, but it is also grown by estates in lowland areas of Kedah, Perak, Selangor and Johore.

In 1962, from a total planted acreage of about 9,000 acres, the growers produced a record crop of 6,260,000 pounds of made tea, against 4,590,000 pounds in 1954. This was five times the quantity produced in 1947.

The popular conception that tea will only grow at high elevations does not hold good in Malaya, where of the 1962 yield 3,067,158 pounds came from Highland estates compared with 3,192,000 pounds from the lowlands.

Whilst production increased from 4.59 million pounds in 1954 to 6.26 million pounds in 1962, imports also increased, but at a somewhat slower rate, from 5.85 million pounds to 6.63 million pounds and the exports increased from 4.88 million pounds to 5.14 million pounds. Local consumption of tea has remained fairly steady at around 7 million pounds a year.

The greater part of estate production is of black tea, but small amounts (about 3.5 per cent of total production) of green tea are also produced. The smallholders produce a greyish-green leaf which is sold mainly to Chinese tin-mine owners who supply tea to their labourers.

Other Crops. Apart from rubber, coconut, oil palms, pineapple and tea, the other cash crops are cultivated on a small scale in the Federation include coffee, tobacco, pepper, cocoa, and nipah palm. In the past, some of these crops have enjoyed a temporary boom in the area now covered by the Federation. Pepper was a major crop around Penang in the early years of the nineteenth

century. Later the growing of sugar cane expanded and reached its peak about the period after 1860. Coffee cultivation flourished in many parts of the country until the industry was ruined by disease and acute price fluctuations. All of these were finally superseded as major crops when rubber conquered Malaya in the early years of the present century.

At the present time, except for one estate in Selangor, coffee is grown on smallholdings. The only type planted is "Liberica" coffee, a variety which does not enter the international market. Of the 14,800 acres under coffee in 1962, 10,700 were located in the coastal lowlands of Selangor. The total acreage is increasing slowly as some of the smallholdings under old rubber are replanted with coffee.

Tobacco is usually grown in rotation with market-garden vegetables or as an off-season cash-crop in padi areas. The variety commonly planted is the large-leaved Deli type which yields a low quality tobacco. Yields vary from 650 lb. to 1,000 lb. per acre. Home-grown tobacco finds a ready sale, and planting has been stimulated as a result of increases in duty on imported manufactured tobacco. The largest areas are in Perak and Pahang.

Pepper cultivation has been responsible for much of the soil erosion in Johore and Singapore in the past, due to the clean-weeding practised by the Chinese farmers on the hill sites in which the crop was grown. In recent years, the high prices for pepper have stimulated some expansion in acreage. Practically all of the 630 acres under the crop are in Johore.

"The Nipah palm, Nipa fruticans, grows wild in tidal locations along the coast of the Peninsula, mainly in estuaries where there is the brackish water necessary for its growth. The leaves are much used as thatching material

(atap) by the Malays for the roofs as well as walls of their houses. The leaves are also used for making baskets and mats, and the young leaves for cigarette-wrappers. Supplies from the wild palm are limited, and supplementary supplies are obtained from palms planted along the coasts of all the States."

During 1948 a report by Dr. Cheeseman on the possibilities of cultivating cocoa in Malaya was published and his recommendations had been carried out - over 400 acres had been made available for experimental planting in various parts of the country. But due to the fact that not much of the Malayan soil is suitable for cocoa, and those areas which are suitable are fairly widely scattered, it is unlikely that large continuous cocoa areas can be established.

Among the food crops, except rice, the largest areas are occupied by vegetables and the rice-substitute crops of tapioca, sweet potato and maize. All the food crops are produced for home consumption and do not enter the export market.

The vegetables that enter the local market are from Chinese market gardens.(7) The Malay peasant farmer does not cultivate vegetables for sale but may have a small vegetable plot in his kampong for his home supplies.

"Chinese market gardens are usually located on the outskirts of towns and villages, most of them being found in western Malaya where the demand among the urban population for fresh vegetables, pork, freshwater fish, chickens and ducks is greatest. The 1960 Census of Agriculture showed that there were

---

(7) Chinese market gardens are of two types: (1) the ordinary mixed farm, raising pigs, chickens and some crops, including vegetables, for sale and other crops such as tapioca, for stock-feed, and (2) the vegetable farm specializing in the intensive cultivation of vegetables for sale. The techniques and principles of intensive market-gardening are similar to those practised in ordinary market-gardening.

4,040 vegetable farms in Malaya.[8] Eighty per cent of them were under 2 acres in size, and 48 per cent under 1 acre in size."

The vegetables commonly cultivated are the green, leafy vegetables, such as Chinese cabbage, spinach, cress, lettuce, mustard leaf, Chinese kale; vegetable fruits such as cucumber, bitter gourd, snake gourd, tomato, brinjal, pumpkin; root vegetables such as potato, sweet potato, carrot, lobak; and the beans and nuts such as four-angled bean, French bean, string bean and groundnut. Chinese market gardens in Cameron Highlands are run on the same lines as those in the lowlands, the manures used being prawn dust and fish waste. The vegetables cultivates are those which cannot be produced commercially in the lowlands, and include green peas, beetroot, parsnip, radish, turnip, vegetable marrow, celery, lettuce, mustard, watercress, capsicum, asparagus, cabbage, cauliflower, shallot, spinach, horse-radish, mint, parsley, sage and thyme. These grow well in the cooler environment of the highlands.

The production was insufficient to satisfy the needs of the country's population, in spite of the fact that an acre may yield up to 8 tons of vegetables annually. Imports of vegetables in 1958 totalled 52,200 tons, made up of 35,800 tons of fresh vegetables and 16,400 tons of dried and preserved vegetables.

Tapioca occupies the largest area under food crops. It is a tropical plant that will grow on almost any soil, provided it is well drained. Because of its drainage requirements, it is usually cultivated on undulating or hilly land. The main areas of tapioca are in Kelantan, Kedah, Penang and Province

---

(8) A vegetable farm is defined as a farm in which three-quarters or more of the total cultivated land is under vegetables.

Wellesley, Perak, Selangor and Johore. It is widely cultivated by the Chinese as pig food, while the lower income groups of all races use it occasionally as a rice-substitute, or in the preparation of cakes.

Of the other important food crops, sweet potato is cultivated in Chinese market gardens for pig food and to meet a small local demand for a cheap rice-substitute. The other food crops are of minor importance and occupy only small areas, such as sago, groundnut, water-melon, colocasia, sugar-cane, yam, pulses, and sugar-palm.

Tropical fruits in great variety grow well in the Malay Peninsula. Many of these are indigenous while others are introduced from other tropical countries. Indigenous fruits may be wild or cultivates. A catalogue of Malayan fruits lists thirty-nine principal varieties commonly cultivated, forty-seven varieties of lesser importance, forty-four indigenous varieties not commonly cultivated but collected and eaten by the local population, and five varieties which only grow at high altitudes. In spite of this great variety of fruits, cultivation is only of local importance, and canned pineapple is the only fruit regularly exported in large quantities. Local production of fruit is insufficient to meet demand and in 1962, 16,167 tons of fresh fruit (9) valued at M$ 16.1 million were imported. Large quantities of preserved and canned fruits are also imported.

A number of spices are also grown in Malaya. Of these, the most important is the Arecanuts or Betel-nut, which is grown as a smallholdings crop mainly in parts of Johore, Kedah, Kelantan and Trengganu. The arecanut palm appears

---

(9) These fruits include the oranges, apples, pears and grapes.

to grow well with very little attention or cultivation as long as the soil is suitable. Exact production figures are not available, owing to the fair amount of local consumption.

"Chillies are grown in Chinese market-gardens and Malay kampong for home and local consumption. The sireh plant, is grown on a small scale in most Malay kampong, the leaves being used for chewing. Clove and nutmeg were once export crops, but are only of local importance today, most of these spices being in Penang and Province Wellesley. Turmeric and ginger are also grown only for the home market, mostly located in Kelantan and Malacca".*

Animal Husbandry. There is little, if any, natural pasture land in Malaya, and the livestock industry has never formed a major element in the national economy. The total value of livestock products, including meat, poultry, eggs and milk, amounted to less than 5 per cent of the net national product.(10)

The principal animals reared are buffaloes, oxen, goats and swine. Buffaloes are widely used for draught purposes, especially in rice cultivation, and their use as meat is frequently only incidental to this main purpose. Standards of care and feeding are usually low, and there has in the past been little attempt to develop meat and milk production as a major industry. The main exception to this is the Chinese pig industry, which forms an integral part of Chinese smallholding agriculture.Φ The demand for pig products is, however, limited to the non-Moslem and non-Hindu sections of the population, i.e., mainly the Chinese and Europeans. In fact, the only animal foods regularly eaten by all the communities are poultry and fish.

---

(10) See Frederic Benham, "The National Income of Malaya, 1947-1949", Singapore, 1951.

* See Ooi Jin-Bee, Op. cit., P.271.

Φ According to Devendra's study, two systems of pig feeding are commonly used in Malaya. (i) Intensive commercial pig production in urban fringe areas, (ii) Rural pig production based on the pig-vegetable-root crop association. Pig production in urban fringe areas enjoys such advantages as reduced transport costs in view of close proximityto towns, easy accessibility to commercial feed-stuff depots and a ready market for the sale of porkers. Pig-rearers rely almost wholly on purchased concentrates for their feeding systems, incorporating roughage as and when it becomes available, due to a scarcity of arable land for growing starchy root crops to supplement the concentrate rations. In the rural areas, by contrast, starchy crops such as sweet potato and tapioca, and roughage are incorporated into the feeding system together with limited concentrates. Inherent in this pig-vegetable-root crop association, is the dual functional role of the pig which not only converts vegetable waste products into meat but also produces farm-yard manure. Pig rearers in the rural areas are therefore less dependent on imported concentrated feedstuffs, thus reducing production costs on the one hand and diversifying farming on the other. See also C. Devendra, " A comparison of two systems of pig feeding commonly used in Malaya," M.A.J., Vol.44 No. 1, (1963).

Most poultry are raised on a small family scale in backyards and in the kampongs, and are the birds are usually underfed and badly housed. Poultry in rural areas are allowed free range, scavenging such food as they can in the form of insects, grass, seeds, household refuse. See also Ooi Jin-Bee, "Land, people and economy in Malaya," P.279.

Before the Second World War the supply of locally-bred animals for fresh meat had been supplemented by live imports. Fourteen per cent of the cattle (buffaloes and oxen), 95 per cent of the sheep and 22 per cent of the goats required for slaughter in 1939 came from abroad; the figures in 1963 were approximately 10 per cent, 100 per cent and 0.2 per cent respectively.(11) The Federation is self-supporting in pork, which is almost wholly reared and consumed by the Chinese community, and nearly self-supporting in poultry and eggs. In Singapore, it is self-supporting in poultry and eggs and exports some to the Federation. Pork produced in Singapore provides about 60 per cent of the former's fresh supplies, while cattle, sheep and goats are imported to supply the requirements of Hindus and Moslems; and most of the fresh meat consumed by Europeans comes from Australia. Supplies of animals for meat come from a few areas in South-East Asia known to be free from disease. Cattle for slaughter come almost exclusively from Bali, and sheep and goats from Australia.

A marked feature of animal husbandry is the freedom from the usual tropical cattle scourges, rinderpest, anthrax, blackwater and foot-and-mouth disease. Tuberculosis has not been detected in local livestock. A few outbreaks of haemorrhagic septicaemia occurred among cattle and buffaloes but were quickly controlled by serum and vaccine therapy. Malayan livestock and poultry suffer from a wide variety of both endo- and ecto-parasites which cause loss of condition and some mortality. The use of hexachlorethane for the treatment of liver fluke and phenothiazine for other helminth parasites is gaining popularity among stock owners.

---

(11) See Appendix III.

The Veterinary Department both in Singapore and the Federation are engaged principally in preventing the introduction of animal diseases into the country, in controlling local outbreaks and in ensuring sufficient supplies of animal proteins and fats for the local market.

Fisheries

In Malaya, fish is the main source of animal protein. It forms the second staple food not only of the Malays, but also of the immigrant Chinese and Indian population. Because of its cheapness and relative abundance compared with meat, fish has always been a popular food with peoples of all races, and the influx of the immigrant population generated an increasing demand. In response to this demand, most of the fishing communities along the 1,200 miles of coasts began to specialize in catching fish for the local markets, and fishing became a regular full-time occupation. The number of people engaged in fishing has increased steadily over the years, reaching a peak of 77,700 in 1950, but declining, due partly to poor fishing seasons, to a total of 53,100 in 1962. Of these 33,900 were Malays, 18,800 Chinese and the remainder, Indians and others.

In the east fishing is still largely a Malay industry, utilizing traditional methods such as the large lift net, certain drift-nets, and certain types of seine-nets, and making use also of line fishing and traps and pots for demersal feeders. The structure of this "peasant economy" is by no means simple, the fishermen being supported by a chain of middlemen who are responsible not only for selling the catch, but also for supplying the fishermen's diverse needs - timber, bamboo, rattan, nets, and fibres, metal goods and paint, now even outboard and inboard engines, spares and fuel.

On the west coast the fishing industry is predominantly a Chinese one, with the fishermen supported by the intricate ramifications of a Chinese sales organization. Certain types of fishing are well-developed, particularly the use of seine-nets (in Perak and Kedah), drift-nets (Selangor and Malacca), and bag nets (Perak and Selangor), while large and small fishing stakes are more important along the sheltered muddy estuaries and shallow shores of Perlis, Kedah, Perak, Selangor, Johore and Pahang than on the exposed beaches of Kelantan and Trengganu or the sandy coast of Negri Sembilan. The cultivation of shellfish (mainly cockles, krang, Anadara granosa) is significant only in Perak, Penang and Province Wellesley, though other special products such as crabs from Pulau Ketam and prawns from the north Selangor coast are locally important.

The fishing industry of the west coast has benefited from the technical developments associated with the rise of a commercial economy in western Malaya. Good roads and railways not only aid in carrying fish to urban concentrations of consumers, but also in transporting ice from factories in Penang, Sungei Patani, Bukit Mertajam, Parit Buntar, Taiping, Simpang, Lumut, Kampar, Telok Anson, Klang, Kuala Lumpur, Seremban, Muar, Johore Bahru, and Singapore to the fishing centres. Willingness to adopt new ideas and new methods has speeded mechanization on the west coast, and this in turn has led to greater efficiency in production.

In addition to persons directly engaged in fishing, a considerable number are employed in industries and services related to fishing, or depend on income from the fishing industry.

Malaya's sources of marine fish are located in the South China Sea, the Straits of Singapore, the Straits of Malacca, and the eastern extremity of the Indian Ocean. The industry is mainly based on intensive fishing of inshore waters. There is also a small amount of freshwater fish reared, mainly carp and "sepat Siam", a small insipid fish. Carp fry has been flown from China, Ceylon and Borneo and the fish are reared in padi fields and in special fish ponds by smallholders and fish cultivators. Chinese vegetable gardeners are commonly pig and poultry farmers and fish breeders with vegetable production. Some of the mangrove swamp area of Singapore has brackish water ponds formed by means of bunds; each pond is drained by a sluice gate. Cone-shaped bag nets attached to these gates catch shrimp, prawn and crabs as the water flows out at low tide.(12)

Until about 1950 there were virtually no powered fishing craft in Malaya. But, the last decade has been a period of growth and transition for the fishing industry. The reasons include economic and demographic recovery from the war, and continuing economic development of the Federation and Singapore, guided now by government-organized development plans. Political independence has stimulated a concern on the part of the government for the economic welfare of the individual primary producer, particularly for the hitherto relatively impoverished Malay fisherman of the east coast. Simultaneously an increasing proportion of the population is urbanized, and better able (in location and buying power) to benefit as consumers from improvements in communications, distribution facilities and marketing producers.

---

(12) See K. P. Ang, "Report on the Prawn Pond Industry in Singapore" 1963. (in Chinese).

"Technological advance has been rapid in the fishing industry of Malaya in recent years, although this has not been evenly felt throughout the country." Ashore the most important technological development has been the greater availability of ice and refrigerated storage. Consumer acceptance of iced fish is an important factor in opening up the internal market, and this in turn has made heavy investment in mechanization economic. The availability of ice is now becoming significant on the east coast, where eight new fish and ice depots, located at Tumpat, Bachok, Kuala Besult, Kuala Trengganu, Dungun, Kijal, Kemaman, and Kuantan, were operated in 1963.

At sea mechanization of fishing boats, first by outboard motors which could be easily fitted to traditional craft, and later by inboard diesel engines which have greater economy and reliability is the main development of post-war years. Motorized boats are less vulnerable to weather conditions, and can operate up to 120 Km. (instead of the previous 56 Km) from a shore base. Journeys can be made around the coasts of Malaya in pursuit of fish shoals. Table 3.11 indicates the progress of mechanization since 1946, and Table 3.12 indicates interstate differences in the degree of mechanization.

Table 3.11. Mechanization of Fishing Boats

Year	Total number of Fishing boats	Percentage Powered
1946	12,325	0.4
1947	16,215	0.7
1948	19,692	0.9
1949	21,793	1.5
1950	22,804	3.5
1951	20,905	3.4
1952	22,313	5.6
1953	22,607	6.9
1954	21,839	18.5
1955	23,429	19.4
1956	23,371	24.1
1957	23,824	26.3
1958	25,045	29.1
1959	22,263	35.4
1960	23,565	38.0
1961	22,958	42.1
1962	22,183	44.4

Sources: Monthly Statistical Bulletin of the Federation of Malaya, Feb/Mar. 1958, and Jan. 1962.

Table 3.12. Fishing industry by States, 1959.

	Landings/man (tons/man)	Fishermen	Malays (%)	Chinese (%)	Boats	Boats Powered (%)
Perak	4.86	8,003	20.4	78.6	3,071	54.9
Selangor	4.64	4,642	1.4	85.4	2,387	57.3
Malacca	1.41	1,893	43.9	53.8	715	48.9
Penang, P.W.	1.86	4,306	47.0	48.5	2,249	43.6
Kedah	7.10	1,920	80.7	17.7	1,624	25.3
Perlis	3.39	1,250	64.0	29.6	259	24.3
N.Sembilan	0.65	551	57.3	41.5	247	31.1
Johore	2.30	5,750	61.7	38.2	3,443	40.1
Pahang	2.34	3,297	94.9	5.0	797	40.9
Trengganu	0.86	12,664	99.5	0.4	4,506	21.6
Kelantan	0.63	6,265	99.6	0.3	2,965	8.9

Source: Fisheries Department Annual Report, 1959.

Replacement by nylon and other synthetic fibres of the ramie and cotton fibres formerly used in nets has increased the catching power of certain types of fishing gear, and provided stronger nets requiring less repair and maintenance. Drift-net catches in the Malacca Straits had doubled by 1958 with the use of synthetic fibre instead of cotton nets.(13)

Developments in marketing are also taking place. "Quick-frozen fish - held frozen for some time, and thawed before sale - is selling well in Ipoh, Penang, and Kuala Lumpur. Modern drying and packaging methods are being used for shark's fins and other dried products in semi-luxury demand."*

The significance of fisheries in Malaya is illustrated by the fact that the domestic fish supplies account for about 15 per cent of the value of

(13) See Fisheries Department Annual Report, 1958. p. 1.

* See M.W. Ward, 'Malayan Fishing Ports and their inland connections.' (1964).

domestic food, and near 10 per cent of the value of all food consumed. The gross value of fish production is nearly equal to that of rice. After an initial period of post-war rehabilitation, production rose to 105,000 tons in 1949, and annual production since then has varied from 108,000 tons to 120,000 tons. However, production has increased in recent years to 139,469 tons in 1960 and 183,636 tons in 1963. In addition, about 25,000 tons of freshwater fish are produced annually, mostly for home consumption. Catches are affected by seasonal weather conditions in different parts of Malaya.

"The east coast is subjected to the full force of the North-East Monsoon each year from roughly the middle of November to the end of March. During this period it is virtually impossible to launch or sail a fishing boat from the open beaches and, in the past, the monsoon months have been a "dead" period when very little, if any, fishing was carried out, as a result of which the fishermen and their families were poverty-stricken and dependent on financiers for food and money to enable them to survive the period.

The west coast of Malaya is screened from the full force of the North-East Monsoon by the high hills of the Main Range and although the South-West Monsoon brings about a change of weather from about May to September each year, the Straits of Malacca where the west coast fishermen operate, are protected from the monsoon by the island of Sumatra to the West and South-West. The West Coast has its off-season but never a virtually complete cessation of fishing as has been the yearly experience of the East Coast."*

Normally, salting and drying are the main methods of preservation. Some sea products, such as shrimp, are made into paste-type foods which are fermented and keep well. Icing is a common practice, and iced fish come to the market in good condition, considering the climate. In general, preservation is not

---

* See Ooi Jin-Bee, Op. cit., P. 281.

a major problem of the fishing industry as presently constituted. Distribution problems arise, however, when there is a local surplus due to an exceptional catch or when government stimulus through improved methods increases the catch without improving distribution facilities. On occasion, while a ready market has waited in one area, a surplus of fish in another has gone to waste because of inadequate transportation.(14)

On the whole, the industry is based principally on private operators financed with borrowed capital. The individual fisherman so financed sells his fish to his creditor. In recent years, a few co-operative marketing groups exist, and fish dealer associations are widespread in the country.

It is evident that the fishing methods used and the present lack of knowledge concerning the habits, seasonal movements, and problems of improved credit and marketing facilities have yet to be solved.

Forestry.

Forests cover 33,718 square miles of Malaya, of which over 8,000 square miles are of productive forest, and 4,500 square miles of productive forest totalling 26 per cent of the land area.*

The Forests - with a few minor exceptions, the forests of the Federation of Malaya are State owned and fall into two categories, Reserved Forests and State Land Forests - the exploitation and management of which differ in certain essentials. Reserved Forests form the permanent forest estate of the Federation and are being dedicated to the growing of a continuous succession of timber crops and not merely forming a static reserve until all other sources of timber

---

(14) Low-grade dried and salted fish chiefly from the east coast are a traditional export to Indonesia, but in recent years these have been hampered by Indonesian trade controls.

* See Malaysia, 'Official Year Book', P. 314.

supplies are exhausted. Harvesting of the mature crop is, therefore, strictly controlled, and the most complete exploitation possible insisted upon. State Land Forests, on the other hand, once the target acreage required for Reserved Forests has been achieved, are destined for eventual destruction prior to the conversion of the land to agriculture and other uses; exploitation is virtually uncontrolled, much timber being wasted. The yield from forest reserves is, therefore, markedly higher than that from State Land Forests, and this will have an important bearing on the adequacy or otherwise of timber resources of the Federation in the period before the new, improved timber crops mature.

It may be roughly divided - the Malayan Forests - into five broad types: (1) Mangrove swamp forests growing in the tidal water and covering about 560 square miles, mainly on the west coast; (2) Fresh water swamp forests covering about 2,000 square miles of alluvial flats near coast; (3) Lowland dipterocarp forests on dry land from sea-level up to an altitude of about 2,000 feet; (4) Hill dipterocarp forests between 2,000 and 4,000 feet; and (5) Mountain forests above 4,000 feet.

Of these five types, the fresh water swamp forests and lowland dipterocarp forests provide the bulk of the timber supplies, but large-scale investigations are now in progress into the possibilities of converting the swamp forests to the growing of food crops though areas with deep peat will probably be retained as Reserved Forests.

The location of Reserved Forests by States, together with its extent in each State and its percentage to the total area of the State is shown in table 3.13.

Table 3.13. Areas of forests reserved by States, 1963.

State	Area of state (in square miles)	Forested Land	Percentage to total area
Johore	7,330	1,881.7	25.7
Kedah	3,660	1,336.6	36.5
Kelantan	5,750	970.0	16.9
Malacca	640	60.5	9.5
Negri Sembilan	2,565	1,044.9	40.7
Pahang	13,873	3,396.0	24.5
Penang	398	22.6	5.7
Perak	7,980	3,014.7	37.8
Perlis	310	78.8	25.4
Selangor	3,167	811.4	25.6
Trengganu	5,027	739.9	14.7
Total	50,700	13,357.1	26.3

Source: Malaysia Official Year Book, 1963, p. 316.

Although the Government exercises control over the forests, the actual exploitation of the timber resources is in the hands of private enterprise. Timber from Forest Reserves and State land is extracted by independent loggers who sell the round logs to sawmillers for conversion into sawn timber. Some sawmills have their own logging areas and obtain their round logs direct from the forest.

There were some 400 sawmills employing 9,400 men in 1963. The production was 95.3 million solid cubic feet, while outturn of sawn timber amounted to 830,500 tons of 50 cubic feet and about half of it was exported in 1963. (Table 3.14).

Table 3.14. Production and exports of timber.

	Production of timber and fuel				Sawn timber	
	Timber round	Poles	Charcoal	Firewood	Outturn	Exports
	('000 solid cu. feet)				('000 tons of 50 cu.ft)	
1954	46,371	4,096	4,533	10,805	390.4	116.4
1957	57,316	2,571	8,627	9,438	523.1	199.8
1960	79,452	1,932	10,794	7,302	729.4	354.8
1961	78,173	2,278	10,469	8,172	711.1	312.1
1962	81,625	2,544	10,202	6,680	755.7	348.5
1963	95,265	2,920	10,674	5,878	830.5	453.9

Source: Monthly Statistical Bulletin of the States of Malaya, November 1964, p. 21. Table 4.1.

The exports of timber are sizable, it accounts for about M$ 64.6 million in 1963. The total value of this product made M$ 127.4 million in the same year, ranking this industry as fifth in importance in the economy of Malaya only after rubber, tin, iron-ore and rice.

Mining.

As in many underdeveloped countries, mining provided the initial impetus to the development of Malaya, and was in one way or another responsible for the evolution of the economic and social landscapes of the country.

Mineral deposits are connected with the intrusion of the granite forming some of the mountain ranges of the Federation and are to be found most often near the edge of the granite or in the altered rocks nearby. The mountain ranges have been extensively eroded by weathering and by the action of streams, with the result that alluvial deposits of tin-ore and to a lesser extent of gold have been formed by the process of natural concentration.

On the western plains the extensive alluvial tinfields of Taiping, Kinta and Kuala Lumpur may be noted; on the East coast at Sungei Lembing tin lodes are found in altered rocks near the granite margin. In certain areas other minerals are found in small quantities in association with deposits of tin-ore, including tungsten minerals and columbite. Similarly gold deposits include both alluvial deposits and primary lode deposits, as at Raub. Deposits of iron-ore are widespread, although not large, and are thought to have an origin connected with the granite. Deposits of bauxite have been formed by weathering of rocks under conditions suitable for the formation of residual deposits.

Tin mining methods and the mineral recovery processes used depend both upon the nature of the deposit and the mineral to be mined.

Bucket dredging for tin is best used in swampy ground with a soft bedrock, for with dredging there is no pumping problem and the soft bedrock enables the dredge buckets to make a good recovery.

Open mining may comprise gravel-pumping, opencast-mining, or hydraulicing. Gravel pumping for tin or gold is widely used and enables a good recovery to be made when the bedrock is uneven and there are pockets of ore to be cleaned up. Opencast mining for tin is used for deep contact deposits where the depth may be too great for the economic application of gravel pumps and where the overburden must be mined separately and dumped; this method is also used for mining iron-ore and bauxite. Hydraulicing for tin is used when there is an ample supply of water under natural head, the method sometimes being combined with gravel pumping.

Underground lode mining for tin and for gold is necessary when the depth is too great for open mining; it is the most expensive method and so for economic operation deposits worked by this method must be of higher grade.

For more than 76 years, Malaya has been the largest single tin producer in the world. Tin-ore remains the most important mineral product of the country, and tin mining is the largest section of the mining industry. In 1957, 36.3 per cent of the world production was won in Malaya. In 1963, the figure was 42.5 per cent. All the tin produced in the country was smelted at either Penang or Singapore*. But now it is smelted by the Eastern Smelting Company at Penang and by the Straits Trading Company at Butterworth, as this was newly operated in 1955. The ore is mixed with limestone and anthracite and smelted at high temperatures in furnaces. The resultant metal is then refined and moulded into 100 lb. ingots of 99.9 per cent purity. Other mineral products in 1963, in order of value, have been iron-ore, bauxite, ilmenite, columbite, gold, china clay, monazite, copper concentrates, scheelite, wolfram and zircon. (See table 3.15). The production of iron-ore has increased in recent years, but the mining of coal ceased in 1960 due to inability to compete with imported oil.

Table 3.15. Mineral production, 1963.

	(tons)
Tin	59,947
Iron-ore	7,264,543
Bauxite	444,047
Ilmenite concentrate ø	147,014
Gold (raw)	9,116 -/
China clay (kaolin)	1,176

ø Exports figure.
-/ in Troy ozs.
Source: Monthly Statistical Bulletin of the States of Malaya, Nov. 1964. p. 51, Table 1.1 and 1.2.

* Penang and Singapore have done much less smelting of non-Malayan tin since 1945 than they did before 1941, when approximately one-third of the total they treated came from overseas. Since the renewal of tin restriction in 1957 the main smelter in Singapore has been closed down. See Courtenary, P.P., "International tin restriction and its effects on the Malayan tin mining industry", in "Geography", Vol. 46, 1961.

Tin. Tin occurs as Cassiterite (SnO_2) and the term "tin concentrates" in Malaya applies solely to that mineral. It occurs in both primary deposits or in secondary deposits as we have seen in Chapter II. The production has been the most important position in the mining industry in Malaya.

In 1900 output was 43,000 tons or nearly 55 per cent of world production. Apart from a period of abnormal conditions during and shortly after the Second World war, output has never been less than 30 per cent of world production. In the last few years, from 1960 to 1963, the Malayan share has been about 40 per cent, mainly because of the low level of production in Bolivia and Indonesia. There can be no doubt that the behaviour of the Malayan tin industry is of great importance for the ability of the world tin industry to meet demand during the foreseeable future.

Table 3.16. Production of Tin-in-concentrates by method of mining

(Percentages of total output)

Methods of Mining	1928	1937	1961	1963
Dredging	30.2	48.2	52.9	45.9
Gravel pumps	45.1	38.2	34.5	39.7
Hydraulicing	8.4	4.3	2.4	2.0
Opencast mining	6.5	4.0	2.5	4.0
Lode mining	5.6	3.8	4.1	3.7
Dulang washing	1.2	1.3	1.9	2.7
Alluvial shifting	0.4	0.05	-	-
Combined methods	2.1	-	-	-
Others	-	0.1	1.7	2.0

Source: International Tin Council "Statistical Year Book", 1964, and "Fermor Report".

By far the greater part of Malaya's output of tin-in-concentrates comes from dredges and gravel pumps. The relative importance of the different methods

in several years before and since the Second World war is shown in table 3.16.

About 50 per cent of Malayan output comes from dredges, of which 66 were operating at the end of 1963, with three others in course of transfer to new areas. This is a smaller number than in the years 1952 to 1957, when between 76 and 80 were in operation at the end of each year. According to the Fermor (15) Report at least 87 dredges were in operation in 1937.

Output from the dredging sector of the industry reached a post-war peak of 31,800 tons in 1954. By 1957 it had fallen to 28,100 tons. After the period of export control, output rose to 29,600 tons in 1961, but fell to 28,500 tons in 1962 and to 27,500 tons in 1963.

Output from gravel pumps was slower in recovering from the restrictionist phase. Whereas the dredges were back to their 1957 output by 1960, the gravel pumps, of which there were only 470 in operation at the end of 1960 as compared with 597 at the end of 1957, produced only 17,800 tons or some 6,500 tons less than in 1957. Since 1960, however, the number of active gravel pumps has risen sharply, to 572 at the end of 1961 and to 593 at the end of 1963, but this is still 37 fewer than in 1955.

So far as other methods of mining are concerned, the rate of output by 1961 was approximately back to the 1957 rate. One interesting change compared with the early 1950's is a sharp fall in the number of small workings without machinery.

The dredging sector of the Malayan tin industry is almost entirely in the hands of European companies; underground mining and hydraulicing are mainly

---

(15) See Fermor, Sir L.L., "Report upon the Mining Industry of Malaya" (Government Press, Kuala Lumpur, 1939).

European; gravel pump mines on the other hand are mainly owned by Chinese. Usually around 50 per cent of total output comes from European-managed mines; with the lagging recovery of the gravel pump mines after 1958 the European share rose to about 55 per cent in 1960-61. Since then it has fallen to 46.6 per cent.

Both sections of the industry have achieved large increases in labour productivity by the use of machinery. Since 1913 there has of course been a spectacular fall in the labour employed, from 200,000 to about 34,000. Substantial progress has been made in the last decade or so, as can be seen from appendix IV. European-managed mines produced as much tin in 1962 as in 1951 with a labour force about 25 per cent smaller than in 1951. Asian mines have also done extremely well in this respect. With about 24,000 workers in 1950-51 output averaged 20,000 tons; in 1957 an output of 24,000 tons was achieved with only 17,000 workers and in 1962 an output of 21,300 tons with 15,500 workers. Taking both sectors together, we find that approximately the same output could be achieved in 1950 and 1961 with a labour force one-third less in 1961.

Apart from these progresses, the tin mining industry is threatened by at least two problems in the future development. One is the unfavourable market prospects for tin in the world trade as we have seen in Chapter II. The second major problem of the tin industry has been the near exhaustion of the present tin deposits and the need to survey and develop new areas.

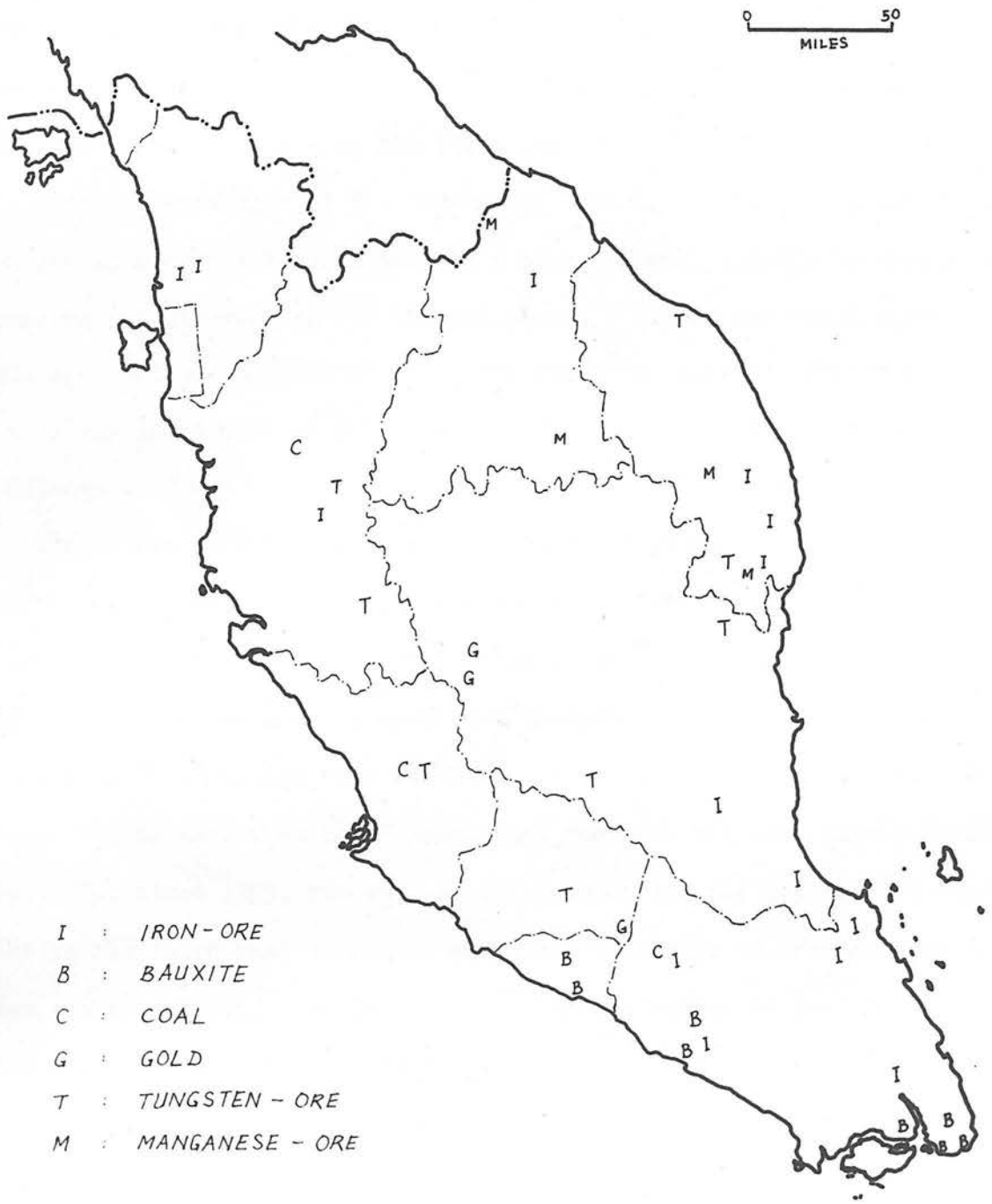
Any estimate of probable tin ore reserves would be little more than a guess; information as to available ore on land under mining lease is incomplete, and nothing is known of the grade, thickness, or extent of the tin-bearing alluvium outside leased land.

It is indicative of the hazards of forecasting mineral reserves that the Fermor Report put the known ore reserves in the Federated Malay States in 1939 at one million tons of tin, since when one and a half million tons have been mined. An estimate, admittedly a preliminary one, based on contemporary evidence by the then Senior Warden of Mines, H. G. Harris, put the total proved reserves of the State of Perak at 500,000 tons of tin in 1937. Perak produced as much as this between 1938 and 1956.

Because of the nature of the alluvium and bed rock it is frequently advantageous to work the same area more than once. The price of tin largely determines what grade of ground can be worked profitably; land may be temporarily abandoned and reworked later if prices rise. Since mining leases normally run for 21 years and can usually be renewed, the area under lease at any time will include land previously worked over but not exhausted. For an increase in the price of tin-ore or a decrease in working costs because of improved mining methods may at any time convert ground once unprofitable into a source of ore-production. In some cases, deposits too deep for economical mining in the past have become accessible as dredging methods have improved.

Generally speaking, the difficulties of assessing the future of tin-mining in Malaya are largely due to the back-log of prospecting, held up for many years by depressions, war, and the emergency. However, it is known that in the Kinta Valley there will be a gradual decline in the production from the old relatively shallow alluvial deposits, although deposits may still be found in the tracts of deep alluvium which dredges have not been able to reach in the past. On the other hand, it is possible that various lode deposits may be discovered in the valley, as well as in the granite hills.

FIG 26
LOCATION OF MINERALS OTHER THAN TIN



BASED ON IBRD REPORT (1955) P. 337.

Iron-ore. Iron-ore has been mined on a small scale in Malaya for many centuries. The first commercial iron-ore mine was opened in Johore in 1921, in which year 74,240 tons were mined. Johore remained the only producing State until 1925, when an iron mine was opened in the northern State of Trengganu, with an output in its first year of 7,690 tons.

With the expansion of the tin-mining industry in Malaya, production of iron-ore increased but still only to a minor extent, largely to supply small foundries and jig-ragging for the tin mines. It was not until about thirty years ago that any significant progress was made, when the Japanese opened up a fairly large mine at Bukit Besi in Trengganu with two much smaller ones in Kelantan. (Fig. 26).

Ore occurs in irregular masses, lenses and veins (and often in boulder form) as magnetite, haematite, and limonite. The iron content varies from 56 per cent to 68 per cent. Extraction is done by opencast methods using excavators, earth-moving equipment and lorries. The total output for 1963 amounted to 7.26 million tons worth M$ 176.3 million were exported. It is interesting to note that total production for 1956 was less than 2.5 million tons. But since 1959, the output has risen up to over 3.5 million tons and ranks as the third most important of Malaya's earners of foreign exchange, after rubber and tin. Table 3.17 gives an indication of the great expansion which has taken place in recent years.

The Bukit Besi mine in Trengganu remains the largest producer in Malaya. Of the total output of 2.84 million tons from three mines in Trengganu in 1961, the Bukit Besi mine alone accounted for 2.73 million tons.

Table 3.17. Production and exports of iron-ore

	Production	Exports	M$
	(million tons)		(million)
1954	1.21	1.06	21.3
1955	1.47	1.59	32.6
1956	2.44	2.39	51.2
1957	2.97	2.92	65.5
1958	2.80	2.59	62.6
1959	3.76	3.77	99.9
1960	5.64	5.50	140.2
1961	6.73	6.44	163.8
1962	6.51	6.44	166.2
1963	7.26	6.58	176.3

Source: Monthly Statistical Bulletin of the States of Malaya, Nov. 1964, p. 51, Table 1.1 and p. 91 Table 1.6.

An important new mine commenced production in June 1962 in the Rompin District of South Pahang. This mine promises to become an even larger producer than its associated mine in Trengganu, it aims at an annual production of 3 million tons or if demand warrants, 4 million tons. In addition, there were twenty-seven smaller mines in Kedah, Perak, Selangor, Johore, Pahang, Trengganu and Kelantan in operation at the end of December, 1962, but their individual output is relatively small. (See table 3.18).

Iron and steel form the foundation of all modern heavy industry, which has not yet been developed in Malaya largely for the lack of coke which is necessary for the reduction of the ore. For this reason, the Malayan iron mining industry is dependent on exports, the vast bulk of which are taken up by Japan. It is probable that new techniques simplifying the production of pig iron will enable Malaya to produce its own iron and steel supplies in future and so reduce its present almost total dependence on imported material.

Table 3.18. Production of iron-ore by States, 1962.

State	Active mines	1962 Output	Post-war output
		(Thousand Tons)	
Kedah	5	416.6	1,542.9
Perah	12	1,305.9	6,092.9
Selangor	1	54.9	54.9
Johore	5	683.0	3,775.4
Pahang	3	820.4	981.1
Trengganu	2	2,728.7	22,154.4
Kelantan	1	221.5	2,405.2
Total	29	6,507.3	37,006.9

Source: "Far Eastern Economic Review" June 6, 1963, p. 553.

Other Minerals. Bauxite, the ore from which aluminium is produced, occurs in earthy granular masses. The principal deposits occur in the vicinity of Telok Ramunia in South Johore. Annual production is of the order of half-a-million tons, the bulk of which is exported to Japan with smaller quantities to Australia and Formosa. The metal aluminium itself is produced in electric furnaces by the reduction of alumina obtained from bauxite, and this presupposes the existence of a supply of abundant and cheap industrial electricity. For this reason, no aluminium metal is produced in Malaya at present.

The mineral ilmenite, which is an oxide of iron and titanium, is produced in Malaya as a by-product from tin mining. It has the appearance of an iron-black sand and some 147,014 tons were exported in 1963, mostly to Japan and Europe.

Gold is to be found in many parts of Malaya, but has almost ceased to exist as a self-contained industry - the principal mine which produced two-thirds of the output in 1959 having closed down as it has worked out its

economic deposits. What is produced today comes almost entirely as a by-product of tin-mining. All gold produced locally is sold locally for the manufacture of jewellery.

China Clay, almost the entire production is absorbed by local industries, although a small amount is exported to Thailand. As the name suggests, it is used principally in the manufacture of porcelain and china, but is also a filling agent in paper, rubber and paint manufacture. It occurs as a result of weathering of felspars and granite, is white when pure and is a very soft and powdery material.

Columbite, a columbium-titanium mineral, occurs as a black sand and is recovered as a by-product of tin mining principally in Johore and Kedah. Output is small, and demand varies.

Coal is no longer mined commercially in Malaya, the main mine at Batu Arang in Selangor having closed down in 1960 owing to its inability to compete with imported fuel oil.

Copper concentrates, these again, are a by-product of the tin mining industry, and their production is relatively insignificant. These concentrates come principally from the Sungei-Lembing lode mine in Pahang.

Tungsten minerals, this is another small source of the nation's economy which occurs as scheelite (a calcium tungstate) and wolframite (a tungstate of iron and manganese). The former is yellowish-white and occurs in tin and in gold-bearing veins, and the latter is black and is only found in association with tin.

Manganese, this is seldom exported owing to the lack of demand, and occurs in association with iron-ore at Gual Periok in Kelantan. When separated from the iron-ore, it is stockpiled.

Monazite is another example of a by-product of the tin mining industry. It is a phosphate of cerium metals with thoria and silica, and occurs as a pale yellow sand. It is a source of thorium salts. The entire by-production is usually exported to Japan.

Zircon is also a by-product of tin mining and occurs as a reddish-brown sand. Production is small and is wholly exported.

Manufacturing.

Many of Malaya's industries are related directly or indirectly to the country's position as a producer of raw materials. Usually the location of raw materials and the nearness of local market or transportation facilities have determined the siting of secondary industries in Malaya.

It has over 100 types of manufacturing industries with the greatest industrial activity in the States of Penang, Perak, Selangor, Johore and Singapore. Petaling Jaya, an industrial area just outside Kuala Lumpur has the greatest concentration of factories. The total estimated output of all manufacturing industries in 1959 was valued at M$ 624 million and the employment provided by these industries was 111,000*. Although over 8,000 factories throughout the country are using power driven machinery, none of them belong to heavy industry (e.g. iron and steel, heavy engineering, etc.), and most of them are still small units which are basically "backyard" factories.

---

* It is estimated that there are approximately 2,400 manufacturing firms, employing 54,000 workers, with an annual output of about M$ 390 million in Singapore.

As the Rueff Report pointed out,[16] the size-distribution of firms in the Federation and Singapore is remarkably similar. In each territory about 84 per cent of all firms have under 20 employees, and 2 per cent have over 100, these latter producing around 40 per cent of the value added. Small firms in Singapore make, however, a noticeably larger contribution to net manufacturing output than in the Federation.

It may roughly be divided into three categories of industries in the manufacturing sectors. These are: (1) the primary processing of agricultural products such as rubber and coconut, off estates;[17] (2) the manufacture of food products, beverages, tobacco, structural clay products, wood products. This category contains most of the industries that can be classified as "large" of employing more than 1,500 workers; and (3) more capital-intensive operations such as machinery repair, tin cans, machine parts, etc., which go to make up an industrial complex as it is understood in more advanced countries. According to the Rueff Report, in the Federation about 22 per cent of value added originated in primary processing, 42 per cent in food and other basic manufactures, and 36 per cent in the more capital-intensive operations.[18] In more highly developed Singapore, the latter category of industry contributed about 43 per cent of the net value of manufacturing output,[19] with about the same percentage contribution from primary processing as in the Federation.

---

(16) See I.B.R.D. "Report on the Economic Aspects of Malaysia" July 1963. (Kuala Lumpur, Government Press, 1963).

(17) Processing on estates is by definition, not included in the manufacturing sector.

(18) See also Federation of Malaya, "Survey of Manufacturing Industries, 1961" (Kuala Lumpur, Department of Statistics).

(19) See Singapore, "Census of Industrial Production, 1960," (Singapore Government Printer).

The following manufacturing industry groups are the ten largest (excluding primary processing) in Malaya in terms of employment of each employing over 1,500 persons: small ship building, printing and publishing, metal can manufacturing, food processing, structural clay and cement manufactures, rubber shoes, furniture, tobacco products, beverages (including aerated water), and biscuits. Production of each of these commodities is carried out in both the Federation and Singapore.

The traditional concentration on the processing of primary products, the provision of ship-building, docking and facilities, light engineering works and motor assembly plants have been supplemented in recent years by various industrial projects relating to chemical, mechanical, electrical, metal working, engineering, building materials and food industries.

In terms of small-scale industries like cooking oil, peanut butter, naphthaline balls, garment manufacturing, printing ink, perfumes, zip-fasteners, etc., practically all the industrial lots in the small-industrial estates have been taken up.

The recent growth of the manufacturing sector appears to have been rapid, particularly in the Federation, the net value of output in the Federation probably rose by over 30 per cent between 1959 and 1961,(20) accompanied by a rise of around 26 per cent in salaries and wages paid and 25 per cent in the volume of commercial bank lending to the manufacturing industry. Employment in the sector rose by about 15 per cent in the same period. Particularly

---

(20) See Federation of Malaya, Department of Statistics; "Survey of Manufacturing Industries 1960", and "Trends in Manufacturing Industries, 1959-61", covering firms producing about 70 per cent of net value of output.

rapid growth was observed in chemical products as a group, the value of sales rising over 50 per cent between 1959 and 1961, the establishment of pioneer firms playing a large part in this development. Metal products, structural clay products, tin cans and canning and other categories all showed substantial progress in sales and net value of output. This, and the evidence of the recent increase in imports of investment goods, suggest that in the last few years there has been a sharp rise in investment and value added in the manufacturing industry in the Federation, although of course, the absolute level of output is still small.

In Singapore, recent growth in manufacturing has been less spectacular after buoyant progress had been experienced in the 1950-57 period. Although comprehensive industrial statistics are lacking, it appears that the increase in output stagnated after 1957 until 1960, whereupon growth resumed during 1961 and 1962. During this latter period the Economic Development Board participated actively in the establishment of a number of plants and there was an increase in the number of small manufacturing firms. The Economic Development Board has developed an enormous area of approximately 9,000 acres in the Jurong area, south-west of Singapore island, which will provide the most efficient transport facilities, utility services and sites for new and expanding industries.

Trade.

It has been observed that Malaya is essentially an agricultural country and a producer of basic commodities required by more industrialised lands. The country's external trade is to a large extent determined by these circumstances. Whilst exports are made up of rubber, tin, oil, palm oil, copra,

timber, certain mineral ores and products of the country's tropical agriculture; imports consist of manufactured consumer goods, machinery, chemicals, tobacco, beverages, foodstuffs not produced in the country and rice which is produced in insufficient quantities for the needs of the population.

The rapid increase in trade up to the Second World War is an indication of the rate of economic development of Malaya. The volume of trade almost doubled in the five years between 1895 and 1900, and increased by two-thirds in the next five years. The rate of increase then slowed down until the 1920's, when it became more pronounced, reaching a climax in 1926 when the total trade of the country reached the record figure of nearly M$ 619.5 million.(21) The trade balance was always in Malaya's favour up to the beginning of the Second World War, due largely to the development of the tin, and later the rubber industries. Tin was the dominant export until 1915, when rubber came to the fore, and by 1925 the exports of rubber were nearly four times as important (by value) as tin. Together these two primary products accounted for the larger part of the total export trade of Malaya, a position they continue to hold to the present day. (See table 3.19).

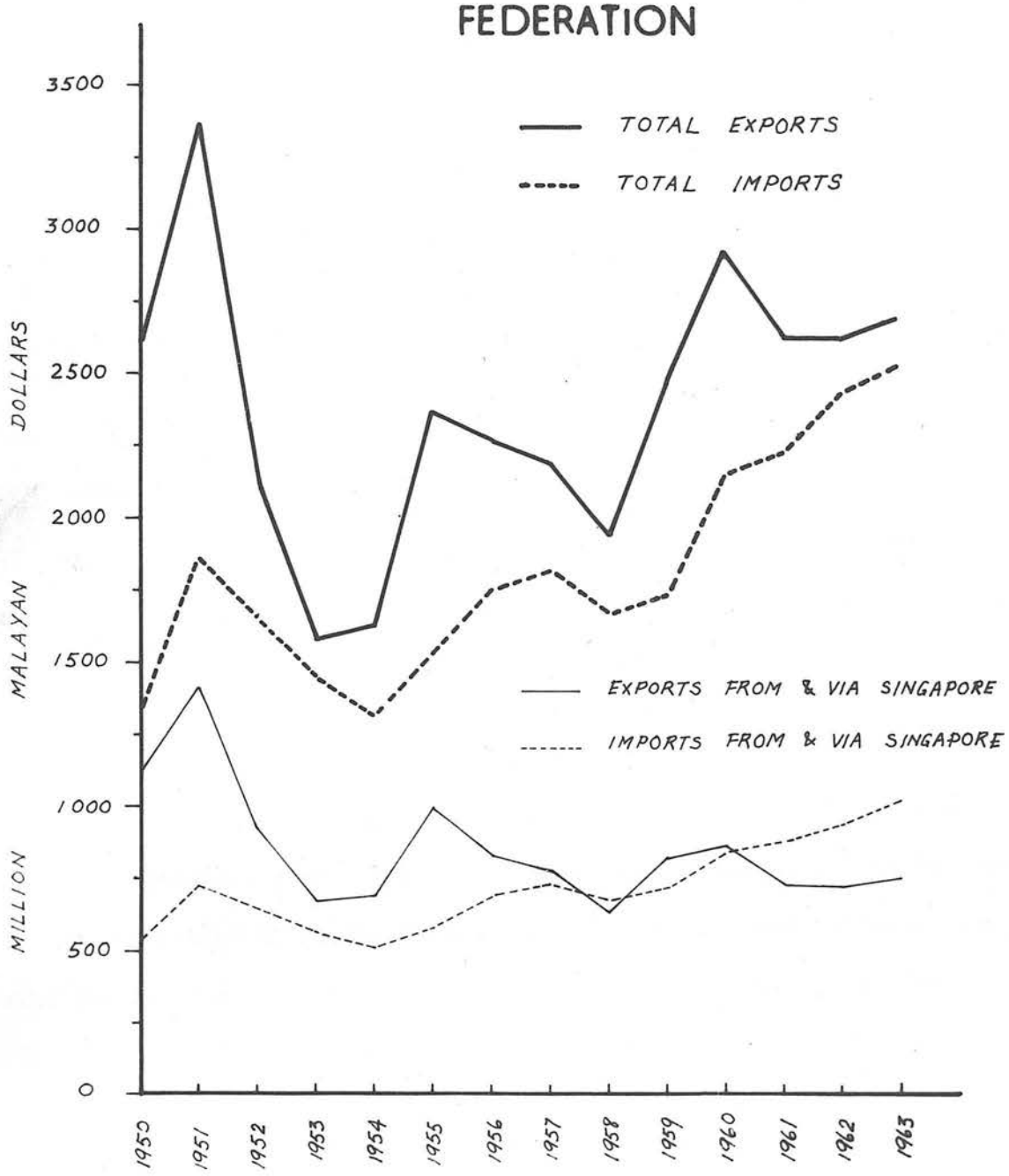
The trade of Malaya is mainly of two kinds. First, "there is the importation of goods for internal consumption and the export of raw materials produced in the Federation of Malaya, of which rubber and tin are by far the most important." Secondly, "there is a large entrepot trade, which dates from even before the development of the rubber and tin industries." The latter includes the importation of large quantities of raw rubber and some tin concentrates from neighbouring countries for processing and re-export.

---

(21) See Annual Report of the Straits Settlements, 1926.

FIG 27

BALANCE OF TRADE OF THE FEDERATION



BASED ON FIGURES IN MONTHLY STATISTICAL BULLETIN OF THE STATES OF MALAYA, NOVEMBER 1964. P. 89 TABLE 1.1

Table 3.19. Percentage of total value in the composition of exports of the Federation.

Commodity	1954	1957	1960	1961	1962	1963
Rubber	55.6	59.8	62.6	55.0	52.2	50.9
Tin (concentrates, ingots, etc.)	24.8	20.2	17.4	21.2	23.7	23.8
Iron ore	1.3	3.0	4.8	6.2	6.3	6.5
Copra and coconut oil.	3.9	2.6	2.0	1.8	1.2	1.3
Palm oil and kernels.	2.3	2.4	2.5	2.6	2.7	2.8
Pineapple (fresh & canned fruit).	0.9	1.1	0.9	1.1	1.2	1.2
Timber	1.1	1.3	1.9	1.6	1.8	2.4
Other commodities	10.1	9.6	7.9	10.6	10.9	11.1
Total	100.0	100.0	100.0	100.0	100.0	100.0

Source: Monthly Statistical Bulletin of the States of Malaya, Nov. 1964, p. 91, Table 1.5 & 1.6 and p. 92, Table 1.7 & 1.8 and p. 89, Table 1.1.

Of the first kind, it forms a very important part of the country's economy. Being a primary producing country, nearly all of the agricultural and mineral raw materials produced have to be exported to foreign markets. At the same time large quantities of goods, mainly food and manufactured articles, are imported for internal consumption. The importance of trade by different commodity sections are shown in table 3.20.

The rate of increase in exports from Malaya in recent years has been somewhat slower than that of imports, with the result that the substantial favourable balance of trade experienced by Malaya for a number of years has been shrinking. (Fig. 27). Total exports (excluding trade between Singapore and the Federation) were M$ 5,168.0 million in 1963 as compared with

Table 3.20. The value of trade by commodity sections, 1963.

(M$ million)

Commodity section	Imports		Exports	
	Federation	Singapore*	Federation	Singapore*
1. Food and live animals	657.0	849.3	112.3	578.5
2. Beverages and Tobacco	61.2	78.7	1.2	52.2
3. Crude Materials inedible.	292.3	967.7	1,669.3	1,114.7
4. Mineral fuels, lubricants and Related Materials	152.9	585.0	13.0	432.8
5. Animal and Vegetable oils and fats	11.7	38.7	91.1	40.9
6. Chemicals	168.1	174.3	32.0	103.8
7. Manufactured goods.	469.3	659.0	680.8	409.7
8. Machinery and transport equipment.	511.3	523.3	51.9	340.8
9. Miscellaneous manufactured articles.	151.3	313.8	22.2	139.2
10. Miscellaneous transactions and commodities etc.	59.0	89.0	30.8	261.7
Total	2,534.1	4,279.0	2,704.6	3,474.5

* Including trade between Singapore and the Federation.

Source: Monthly Statistical Bulletin of the States of Malaya, Nov. 1964, p. 90, Table 1.3 & 1.4, and Singapore Monthly Digest of Statistics, Vol. III No. 4, April 1964, p. 52, Table 7.9 & p. 53, Table 7.10.

M$ 5,561.5 million in 1960. Foreign trade itself contributes a larger item in the Federation's balance of payments account than in that of Singapore.

No major changes have taken place in the composition of the exports of Malaya in recent years. (See table 3.19). But expanding imports of machinery, mineral fuels, and manufactured goods are significant as shown in appendix V. These reflect both the rising requirements for economic development and a

growing consumer demand for manufactured goods. Beverages and tobacco declined in imports in 1962 and 1963, because of the increase of domestic production, but material substitution of local food production over imports will not take place until greater rice production is achieved. Some reduction may also take place in the near future in the importation of manufactured products as domestic industrial production increases.

Of the second kind, "the entrepot trade, which makes up between 40 and 50 per cent of the total trade of Malaya. Most of the entrepot trade (about 90 per cent) is handled by Singapore, and almost all of the remainder by Penang." Both act as intermediary centres and temporary depots for goods passing from a foreign source to a foreign destination. Especially in Singapore, for more than a century, it has been the commercial and financial centre of South-east Asia. Its duty-free port and excellent harbour installations invite ships from all countries. The bulk of Singapore's commerce is in commodities which pass through the hands of the island's business community from a source outside Singapore and, often after minor packaging and processing, move on to a distant or nearby destination.*

Many of the goods which pass through Singapore undergo some sort of processing. Commodities such as rubber, spices, copra, and lumber are sorted, graded, packed and processed to some degree before being shipped on to their ultimate destination.

Manufactured goods coming from industrial countries go through more or less the same process. Bulk shipments are broken down into smaller lots to meet the limited requirements of the countries of South-east Asia, and many

---

* See Ooi Jin-Bee, Op. cit., 341-345.

goods, especially vehicles and machinery, which arrive dismantled are assembled in Singapore.

The importance of Singapore in the trade pattern of South-east Asia is based on the fact that it is the largest and best organized commercial and financial centre in the area, and also has the facilities, expertise and experience to conduct multilateral trade, and has the storage and shipping facilities to conduct the movement of goods, as we have seen in Chapter II. Thus, the Federation of Malaya, Indonesia, British Borneo, Thailand and other neighbouring countries extensively use the services Singapore has to offer.

Among the trading partners, the industrialised countries such as the United Kingdom, United States, Japan and western European countries are important importers of Malaya's raw materials and supply her with considerable quantities of manufactured goods. To some extent, China and the Soviet Union are also becoming important partners of Malayan external trade in recent years.

In summary, the development of the rubber and tin industries has overshadowed that of other economic activities. With the exception of the trading activities of the entrepots of Singapore and Penang, other industries and occupations are relatively insignificant. This is clearly shown by the proportion which exports other than rubber and tin bear to the total value of exports. It is also illustrated by the production of rice, the basic diet of the Malayan peoples as compared with that of rubber. Rice occupies only some 988,000 acres as compared with more than 4 million acres planted with rubber.

It is true that there are manufacturing industries especially in Singapore and Penang. The milling and smoking of low grade rubber from the Federation

and surrounding countries provides a good source of industrial employment, while tin-smelting is carried on in Penang and Butterworth (a large amount of tin was smelted in Singapore until 1957). The manufacture of consumer goods for the local markets has also made some progress. Nevertheless, the volume of industrial activity is still relatively unimportant. According to the 1957 Census of Population of the Federation, about 11 per cent of the gainfully employed male population and 5 per cent of the gainfully employed female population were engaged in manufacturing, building and construction. Even if we relate manufacturing and allied industries to the economy of Malaya as a whole, they are relatively not as important as agriculture and mining.

In consequence of this lopsided development, Malaya is dependent on the import of foodstuffs and other consumer goods from abroad. Her ability to pay for her imports is dependent on the state of the world market for rubber and tin. Thus she is doubly dependent on the state of the world economy as a source of supply of goods and as a market for her main produce. This double dependence on the world economy raises several important problems. A further study of these problems, however, will be discussed in the following chapters in part two.

PART TWO

PROBLEMS AND PROSPECTS

Chapter IV.

Demographic Aspects of ~~the~~ Economic Development*

The population of Malaya is now about 9 million. It is made up of different ethnic groups, mainly Malays, Chinese and Indians. The proportions in the two territories differ substantially. (Table 4.1) The total population

---

* Before we discuss the demographic aspects in this chapter, three points must be stated:

(1) Unless otherwise indicated, all sources of figures in this chapter are based on the latest censuses:

(i) Population census of the Federation of Malaya, 1957. Report No. 14, by H. Fell, published by the Department of Statistics, Kuala Lumpur, 1960, and
(ii) State of Singapore, Report on the Census of population 1957, by S. C. Chua, (Cmd. 19 of 1964). Government printer, Singapore, 1964.

(2) The term "Malays" used in this chapter as well as in other chapters is according to the following definition: "the official definition of a Malay is a person belonging to the Malay race or any Malaysian race (e.g. Malay, Javanese, Boyanese, Bugis, Banjarese, Menangkabau etc.) who habitually speaks the Malay language or any Malaysian language and professes the Muslim religion". The term therefore covers both the indigenous Malays and immigrant Malaysians. For convenience, further references to Malays will also refer to both these groups.

(3) The term "Indians" refers to both Indians and Pakistanis in the figures for Singapore but excludes Pakistanis in the figures for the Federation, where Pakistanis are included in "other races".

Table 4.1. Population by ethnic groups

Race	Federation		Singapore		Total	
	Persons	%	Persons	%	Persons	%
Chinese	2,670	36.9	1,279	75.2	3,949	44.2
Malays	3,616	50.1	238	14.0	3,854	43.1
Indians	813	11.2	142	8.3	955	10.6
Others	129	1.8	41	2.5	170	2.1
Total	7,232	100.0	1,700	100.0	8,932	100.0

Source: I.B.R.D., Report on the Economic Aspects of Malaysia, July 1963. p. 100 Table III.

is now growing at over 3 per cent per annum, with the population of Singapore rising at 4.4.per cent including 0.9 per cent due to immigration, while in the Federation rising at about 3.3 per cent.

The population is distributed very unevenly; average density per square mile is only about 143 in the Federation, but in predominantly urban Singapore it is 7,800 in 1961.

There are important differences in the structure of economic activity, as we have pointed out in the introduction.

Levels of income also show significant contrasts. On a per capita basis, the Federation has about M$ 800, while Singapore has around M$ 1,300. Virtually, there are also significant differences within the territories. It is not

unlikely, for example, that some parts of the Federation have only about M$ 500, while some prosperous regions like those around Kuala Lumpur and Penang for instance, may be as high as Singapore.

Demographic background

Most of the 9 million people in Malaya are now Malayans, who have in common a country, a political system and a nascent national unity. Nevertheless, differences of descent, custom, language and culture divide the Malayans still into three major and a number of minor communities - the Malays and Chinese, almost equal in number, make up almost nine-tenths of the population, the Indians are the third major community, and Eurasians and Arabs are significant minor groups. The racial communities themselves divide into many smaller groups distinguished by differences of language, class and occupation.

In former times Malay society comprised two classes. The aristocratic or Raya class were the administrators, organisers and war-leaders of their community. In modern times this class is strongly represented in the various branches of the higher civil service. The subject class (the "ray'at" in Malay) were formerly, and for the most part still are, peasants and fishermen living in a subsistence economy based on rice cultivation. In central and southern Malaya, the Malay smallholder is now as often the owner of land under rubber or coconuts as under rice. He prefers these intermittent occupations to regular wage labour though this attitude, like many others, is changing nowadays. Those Malays who leave their villages (usually with the intention of returning eventually) join the police or armed forces or other branches of the government service, or they work as transport drivers. The Malay is by tradition a villager and forms only a small proportion of the urban population.

By temperament the Malay is a quiet and courteous man who, in former days, was content to be governed by his betters but in the period since the Second World War he has become much more conscious of the political and economic problems of his community. Malays are Muslims of the Sunni or Orthodox sect and tolerant in their observances, especially in the liberty accorded to their womenfolk.

A minority of the Chinese, known as the "Straits Chinese", are descended from families which settled in the Straits Settlements several generations back. They may have some Malay blood in their veins and they have been considerably Anglo-Malayanised in their culture. At one time they formed the upper class in the main seaports and as such were the acknowledged leaders and spokesmen of the Chinese community. In recent years however they have lost ground to the larger group of Chinese of more recent origin, who are the children or grandchildren of immigrants from China.

The Chinese come almost entirely from the south-eastern provinces of China (especially Kwangtung and Fukien) and they are subdivided by the local dialects of Chinese (Cantonese, Hokkien etc.) which they speak. The Chinese immigrants were of the peasant class and they came to work as labourers with the intention of returning to China with their savings but have now settled in Malaya. The majority are still labourers on mines and plantations and elsewhere but some, especially in the second and later local-born generations, have become merchants, traders, produce-dealers, shopkeepers and artisans. The Chinese are the dominant element in local commerce, large and small. A minority have won great riches as miners, bankers, merchants and proprietors. The Chinese community is thus much divided by differences of dialect group,

wealth, occupation and length of settlement in Malaya. They have none the less a strong sense of communal solidarity.

They are tough and extremely hard-working, forceful in matters of business, humorous and resilient and they have a remarkable facility for organising themselves into societies and associations for welfare and the prosecution of common interests. As merchants they form trade associations; as immigrants they join societies based on common origin in districts of China. These associations serve as friendly or mutual help societies in which the wealthier members have the opportunity of achieving status and influence by holding office. By these means the Chinese community is able to manage its own affairs - and much prefers to do so.

Chinese religion is a rich amalgam of Confucianism, Buddhism, Taoism and the worship of various local or functional deities. The ritual of temples and processions is elaborate and colourful. The seances of mediumistic possession, the domestic observances of ancestor worship, the quiet retreats of monastic orders add to the extraordinary variety and vitality of a religion which is also tolerant and most characteristically business-like.

The majority of Indians in Malaya are from the Tamil, Telegu and Malayalee linguistic areas of South India. The major Indian immigration movement into Malaya began only sixty or seventy years ago to meet the growing demand for labour on plantations and public works (especially railway construction). Like the Chinese the Indians are now permanent residents in Malaya, and to an increasing extent locally-born. In addition to the labouring class there is a considerable Indian and Indo-Ceylonese "white collar" class of educated men employed in clerical work, in the professions and in shopkeeping. The

Chettiar bankers are an important element in the credit system of Malaya and a channel through which money from India has flowed into investment in land and other property in Malaya. The smaller number of northern Indians includes Sikhs (traditionally nightwatchmen and money-lenders), Bengali traders etc.

The Indian labourer is a docile worker, unless excited, and takes life as he finds it without responding so much as the Chinese to the spur of competitive exertion. The co-operative movement and, since the Second World War, the trade unions have found their widest support in Malaya among its Indians. The educated middle class is politically active but, as a small minority, unable to exercise much influence on the national scene.

The majority of Indians are Hindus. Their temples and the images of their gods are a familiar sight among the labourers' cottages on the plantations.*

This may serve as a brief introduction to Malaya - a mixture, but hardly a blending, of three major cultures, of the national economic systems.

Population Growth.

Before British intervention in the Malay States started in 1874, Malaya was a very thinly-peopled land. Only on the islands of Singapore and Penang were there large urban populations with considerable numbers of Chinese and Indians. On the mainland, including Province Wellesley and Malacca, the inhabitants were almost entirely Malay or Aboriginal. Only a few thousand tin-miners and spice-planters had ventured into the Malay States, the native population of which has been estimated at about 300,000. The Aboriginal of

---

(1) See C. A. Vlieland, "British Malaya - A Report on the 1931 Census and on certain problems of vital statistics", London, 1932, p. 595-6.

* See N. Ginsburg, 'Malaya', pp. 191-316.; also J. M. Gullick, 'Malaya'.

Malaya was either gradually assimilated by the Malays or pushed from the coast into the interior. Today there are only about 100,000 Aborigines in Malaya mainly in the remote interior of the country.

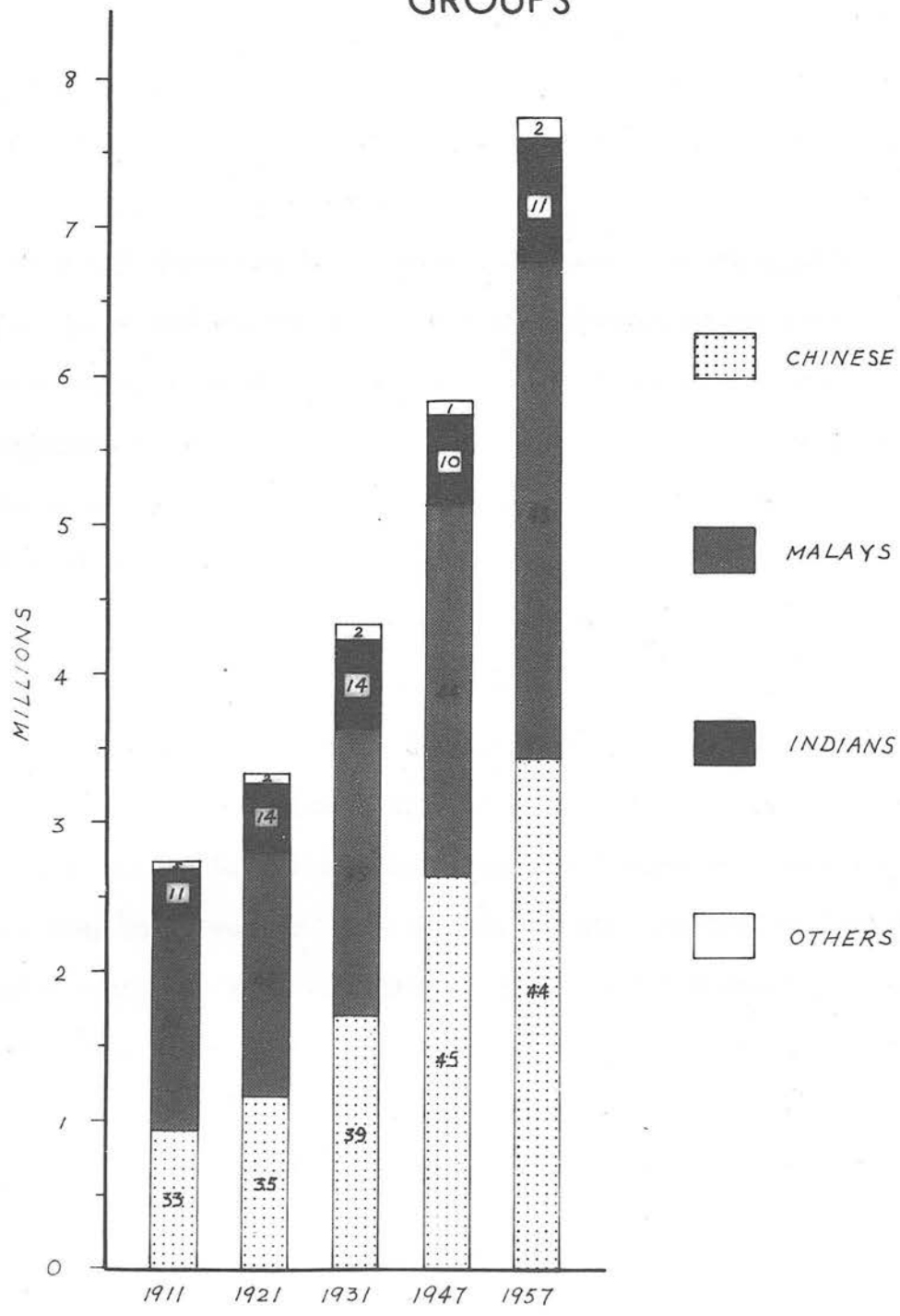
The bulk of the true Peninsular Malays were settled, as they are today, on the padi-growing plains of Kedah, Perlis, Kelantan and northern Perak. The central and southern parts of the country were more sparsely inhabited by Malay settlers of historic times, such as the Menangkabaus of Negri Sembilan, and the Bugis of Selangor. The inhabitants of Johore included still more recent arrivals from the East Indies, whose settlement had been encouraged by the rulers of the State.

"Since about 1800, the growth of population has been rapid." It is important to recognise that "the reasons lying behind the rapid increase of population have changed during the present century. Before the 1930's the increase of population was due chiefly to a large-scale immigration from China, India and Indonesia. During this phase, the crude birth rate being low because of the very abnormal sex ratio and the death rate being high because tropical diseases were not under control in those early days; only the flood of fresh immigrants caused the population to rise rapidly.(2) Subsequently, however, immigration fell and today migration affects the size of the population very little. Yet the rate of population growth has continued to rise. It is clear that natural increase has taken the place of migrational surplus as the chief factor determining the growth of population in Malaya."

---

(2) See T. E. Smith, "Population Growth in Malaya", London, 1952, p. 2.

FIG 28
POPULATION GROWTH BY ETHNIC GROUPS



The general falling level of migrational surplus in Malaya since 1930 has resulted from restrictions to migration both in Malaya and in the countries of origin as well as from the less powerful operation of the attractive forces in Malaya.(See Chapter II). "As for the great improvement in natural increase, this has been caused by falling death rates and rising birth rates, the latter due partly to the improving sex ratios as immigration decreased."*

[redacted]

Figure 28 shows that the proportion of Malays has declined steadily from 1911 to 1957 and that of the Chinese increased during the same period, so that in the whole of Malaya today the Chinese outnumber the Malays. Two points are important about this increase of the Chinese. Firstly, even in 1911 there were more Chinese men in Malaya than Malay men, but there were very many fewer Chinese women than Malay women. The reason was that the Chinese immigrant did not usually bring his wife with him to Malaya partly because he could not afford it and partly because the Chinese Government would not allow women to emigrate in the early days. If there had been as many Chinese women as men in Malaya in 1911 the Chinese would have outnumbered the Malays even then.(3)

---

(3) The Sex ratio between Chinese and Malays in Singapore for example, in 1911 were as follows: 279 Chinese as compared with 117 Malay males per hundred females.

* See B.W. Hodder, 'Man in Malaya', pp. 32-34.

Secondly, up to about 1931 the growing Chinese population was not composed of the same people. Thousands who had made a little money left the country every year to go back to their homeland and their families, while other thousands came in to take their places. The increase of the Chinese population during the period from 1911 to 1931 was due to the excess of immigration rather than the number of children born in Malaya.

Gradually the number of Chinese who settled permanently in Malaya grew larger, and although immigration was checked by unemployment and restricted during the slump of the early 1930's, the Chinese population continued to increase rapidly, mainly because the proportion of Chinese women increased. So, more Chinese children were born in the country, and as the Chinese made better use of the medical facilities available to them in the towns, their death-rate was lower than that of the Malays.(4)

The troubled conditions in China, owing to the Japanese invasion from 1937 onwards, made it more difficult for Chinese to return home, and the Japanese occupation of Malaya made it impossible. By 1947 two-thirds of the Chinese in Malaya had been born in the country, while less than one-third were Malayan-born in 1931, and all but a very few were obviously there to stay.

Although the actual number of Indians in Malaya has more than doubled since 1911, the proportion to the other races has not grown. Generally speaking, the higher classes of the Indian community, the merchants, shop-keepers, clerks and professional men, have tended to settle permanently, but the labourers, who form the largest part, have not done so to the same extent as the Chinese

---

(4) The crude death-rate of the two races in Singapore in 1947 were - Chinese 1.3 per cent, and Malays 1.8 per cent.

labourers. Many still have families in India, return there for visits and intend to go back in their old age. But as with the Chinese, the number of Malayan-born has increased.(5)

During the Japanese occupation, large numbers of Indians were forced by the Japanese to work on the Siam-Burma railway, and the hardships and loss of life account for the fact that the Indian population was actually less in 1947 than it was in 1931, while the proportion declined from 14 to 10 per cent of the total for Malaya.

Since 1911 all other races in Malaya have not amounted to more than about 2 per cent of the population, and have not affected the balance among the three major communities. The influence of the Europeans as Government servants, planters, miners and leaders of commerce has been out of all proportion to their small numbers. The Eurasians have also played an important part and as a community are rooted in the country as deeply as any save the Peninsular Malays and the older Straits Chinese.

As we have seen, with a more settled population and better health services, the natural increase by surplus of births over deaths became a significant cause of population growth from about 1930 onwards. In the Federation, between the 1931 and 1947 censuses the average annual rate of increase was 1.8 per cent, while it was 3.3 per cent in Singapore; but between the 1947 and 1957 censuses it increased to 2.8 per cent and 4.3 per cent respectively. The economic

---

(5) The Malayan-born of Indians has increased from 12 per cent in 1921, 21.4 per cent in 1931 to 51.6 per cent in 1947 and 65 per cent in 1957; while Chinese has increased from 56.4 per cent, 58.9 per cent to 78.3 per cent and 84.8 per cent respectively during the same periods.

depressions of the 1930's marked the beginning of a new phase in the growth of Malayan population. Prior to that time the population had largely been transient and the increase in permanent settlement was very slow, if indeed it was occurring at all.(6) But in recent decades, and especially since the early 1930's an increasingly significant contribution has been made by natural increase. This is partly the result of the more settled nature and balanced composition of the population and partly the effect of the strict regulations controlling overseas immigration especially in the post-war period.

The rapid upward trend in post-war birth rates which occurred in many parts of the world was also characteristic of Malaya: a rapid increase in the years immediately following the Second World War was followed by more moderate but still substantial increases; and in Malaya this trend has been accompanied by a relatively low and declining death rate. By 1957, the birth rate had risen steadily to 46.2 per thousand in the Federation from 42.9 in 1947, while in Singapore it had fallen to 42.5 per thousand from 45.9 in the same period; and the death rate continued to decline to 12.4 per thousand in the Federation from a high figure of 19.4, while in Singapore, it declined to 7.3 from 13.3 in the same period. These give a crude rate of natural increase of 33.7 and 35.2 per thousand in the Federation and Singapore (table 4.2) respectively.

---

(6) See C. A. Vlieland, "British Malaya: A Report on the 1931 Census" (London, 1932), p. 9.

Table 4.2. Rate of population increase for 1947 and 1957.

(Per thousand population)

	Federation					
	Crude Birth rate		Crude Death rate		Natural Increase	
	1947	1957	1947	1957	1947	1957
Chinese	44.0	43.3	14.3	9.8	29.7	33.5
Malays	41.4	48.1	24.3	14.9	17.1	33.2
Indians	49.1	49.7	15.8	11.1	33.3	38.6
Others	22.0	30.5	11.8	6.8	10.2	23.7
Total	42.9	46.2	19.4	12.4	23.5	33.7

(Per thousand population)

	Singapore					
	Crude Birth rate		Crude Death rate		Natural Increase	
	1947	1957	1947	1957	1947	1957
Chinese	46.1	42.4	12.8	7.1	33.3	35.3
Malays	48.1	47.3	17.8	10.0	30.3	37.3
Indians	44.8	40.4	12.7	6.4	32.1	34.0
Others	-	-	-	-	-	-
Total	45.9	42.5	13.3	7.3	32.6	35.2

Together with these facts goes a changing age structure of Malaya. The population is becoming younger in its age composition, over 40 per cent of the total population are under 15 years of age at the present time.(Table 4.3).

Table 4.3. Distribution of population by broad age groups

Age group	Federation		Singapore	
	Number ('000)	Percentage	Number ('000)	Percentage
0 - 4	1,118.3	17.8	264.7	18.3
5 - 14	1,633.9	26.0	354.4	24.5
15 - 29	1,573.6	25.1	366.7	25.4
30 - 59	1,663.2	26.5	404.8	28.0
60 & Over	289.7	4.6	55.3	3.8
Total	6,278.8	100.0	1,445.9	100.0

In general Malaya has entered the phase of heavy youth dependency, and with a rapidly expanding population the juvenile dependency problem will grow progressively more acute.

The conventional international measure of dependency is the ratio of persons of dependent age - under 15 and over 60 - to persons of working age - between 15 and 60. "Comparing 1921 with 1957 this ratio has increased from 4 dependents to every 10 producers in the former year to 9 dependents to every 10 producers in the latter year." This heavy juvenile dependency ratio is characteristic of Malaya as well as in other underdeveloped countries.

But the dependency burden is also affected by factors other than the age structure. These are the degree of unemployment, the school leaving age, and the number of economically active females. Partly on account of the young age structure and partly because less than one-fifth of the females who are 10 years of age and over are economically active, the ratio in the 1957 population of persons who are not working to the economically active was about 2 to 1.

The heavy youth dependency problem has two aspects: the provision of education and technical training facilities, and the provision of opportunities for employment. Though the majority of unpaid family workers (who constitute 5 per cent of the economically active) are juveniles, yet a large number of school-leavers are not absorbed into the labour market.

On the other hand, it is estimated that the population is likely to have doubled in twenty-five years and by 1982 if current fertility rates remain the same, the population would have reached the very high figure of 19.2 million.(7) Then it is estimated that the percentage of the population of under 15 years of age would be 47.3 per cent. Similarly those in the age-group 60 years and above would continue to constitute between 4 and 5 per cent of the population. Thus at least half the population would be dependent on the productivity of the other half.

Population Distribution.

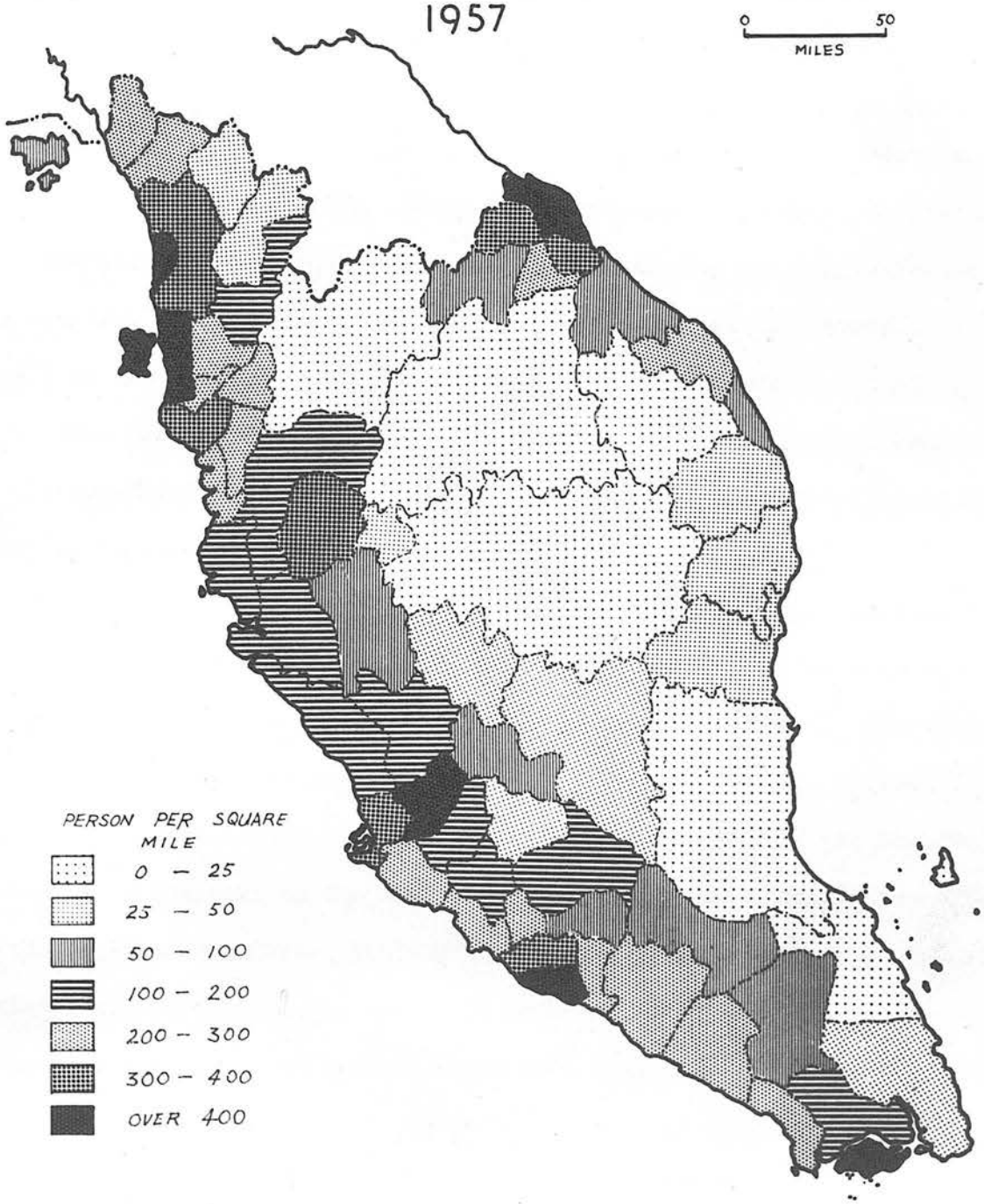
The surface configuration and the natural resources of the country have played an important role in the historical evolution of its pattern of population distribution in Malaya.

"Physiographically Malaya consists of a densely forested central belt of mountain ranges flanked by a well-drained foothill zone, in many places cut off from the coast by large stretches of freshwater and mangrove swamp. Movement in the swamp covered coastal lowland was difficult, and until the advent of roads and railways, the swamps were a formidable barrier to interior penetration." Transport, in the early days, was limited to small boats along

---

(7) See Population Census of the Federation and Singapore 1957, p. 44 and p. 49 respectively.

FIG 29
DENSITY OF POPULATION BY DISTRICTS
1957



BASED ON THE POPULATION CENSUS . 1957.

the rivers. While generally unattractive to other immigrants, the lowlying water-logged alluvial coastal stretches, particularly those in comparatively sheltered and accessible Western Malaya, had high potentialities as padi and fishing areas for the Malays.

The interior foothill zone consists of two sections, an eastern and a western. The latter is the widest and economically the most important. It is comparatively accessible and contains the main tin bearing formations of the country. In addition, its well-drained gently rolling topography lends itself to the cultivation of commercial crops such as rubber and oil palm. It is thus not surprising that it was this region of Malaya that appealed most to the non-Malay immigrants. The major portion of the population of Malaya today is in this region. (Fig. 29).

Repelled by the forbidding forested interior, the Malays were content to remain in coastal and estuarine settlements and eke out an existence through fishing, agriculture, trade and, if needs be, piracy. The Chinese, on the other hand, attracted by the rich tin deposits of the western foothill zone were already moving into the interior by the middle of the nineteenth century. Subsequent to the British occupation of the Federated Malay States in the eighteen-seventies, railway lines were built to link up the pioneer mining settlements with the ports and with each other. With the rapid spread of large scale mining activities along this railway network the concentration of population shifted from the coast to the western interior foothills. Furthermore the railway network encouraged extensive agricultural developments.

Hampered by the lack of suitable land in the Straits Settlements, planters flocked into the Malay States as soon as British rule was established there.

Initially experimenting with sugar and coffee, these planters began, in the eighteen-nineties, to grow rubber as a plantation crop close to the original centres of immigrant activity, in the western foothill zone. The rubber tree was unsuited to the lower temperatures of the highlands or the soggy soils of the swamps. The foothill zone had the advantage of good natural drainage, and, more important still, it had the existing railway network for communication and supplies, especially rice. Rice was the staple food of the immigrant Indian labourers brought from India to work in the plantations, and it had to be imported. Rubber cultivation thus spread ribbon-like along the railway lines in the western foothills, confirming the new pattern of population distribution initiated by tin mining. Later on this pattern was further emphasized and extended as the plantations spread along roads constructed to serve the needs of the expanding industry. From the mid-western foothill zone pioneers gradually pushed north into Kedah and south into Johore as the railway lines were extended into these States.

Roads and a north-south railway line were also constructed in the eastern foothill zone. Consequently, this zone too began to receive new settlers in substantial numbers. But Eastern Malaya generally suffered from the disadvantages of isolation, and inaccessibility, and the lack of the economic attractiveness of Western Malaya. The net result was that the greatest concentration of people developed in Western Malaya. In subsequent years this overall pattern of population distribution and economic development has not changed very much, the tendency has been for it to be accentuated.

In 1947, Malaya had a population of 5.8 million, of which nearly a million were on Singapore Island. Singapore, constituting less than 1 per cent of

the total area of Malaya, had 16 per cent of the total population. By 1957 it had 19 per cent of the total population, principally as a result of a faster rate of annual increase than in the Federation. (Table 4.4).

Table 4.4. Annual rate of increase of population.

(percentage)

	1911 to 1921	1921 to 1931	1931 to 1947	1947 to 1957
Federation	2.4	3.0	1.8	2.8
Singapore	3.2	2.9	3.2	4.3

This lack of uniformity in the general distribution of population between the Federation and Singapore was also a characteristic feature of the pattern within each territory.

The population of the Federation by 1957 was concentrated principally in the Western States of Perlis, Kedah, Pahang, Perak, Selangor, Negri Sembilan, Malacca and Johore (See Fig. 29). Together they contained 83.5 per cent of the Federation's 6,278,760 inhabitants, the remainder being found in the Eastern States of Kelantan, Trengganu and Pahang (Table 4.5). Most of the people lived within forty miles of the coast, especially in mid-western and north-eastern Malaya. The former is the region of greatest development in mining, lines of transport and plantation agriculture, whilst the latter is one of the earliest settled areas of the Malay community. Within this peripheral distribution there were pockets of greater concentration, mainly in (i) the Kedah and Perlis padi plains of the north-west; (ii) the port-city and island of Penang; (iii) the intensely developed agricultural region of Province Wellesley and north-western Perak; (iv) the tin and rubber

Table 4.5. Distribution of total population

State	Total	Percentage
Penang	572,132	9.1
Malacca	291,246	4.6
Perak	1,221,390	19.5
Selangor	1,012,891	16.1
Negri Sembilan	364,331	5.8
Pahang	312,949	5.0
Johore	927,565	14.8
Kedah	701,643	11.2
Kelantan	505,585	8.1
Trengganu	278,165	4.4
Perlis	90,866	1.4
Federation	6,278,763	100.0
Singapore	1,445,929	18.7*
Malaya	7,724,692	-

*Percentage of Total Population of Malaya.

regions of Ipoh/Telok Anson and Kuala Lumpur/Klang, including the urban agglomerations of and around Kuala Lumpur and Ipoh; (v) the Malacca and west Johore coastal strip of rubber and padi cultivation; (vi) the Kelantan Delta padi region of north-east Malaya.

These places, in addition to being regions of intense economic development, have also had the advantage of the momentum of an early start, all of them have been centres of settlement from the beginning of the opening up of the country. The remote and forested mountainous interior has remained largely uninhabited, or sparsely populated in a few places. Except for a little more

filling in of the newly developing areas adjoining the established centres of population concentration, the pattern of population distribution did not change significantly during the last few years.

In Singapore, sixty-three per cent of the total population in 1957 was within the city limits, with minor concentrations in the adjoining Katong and Serangoon suburban areas. Other smaller concentrations were in the factory zone along the Singapore-Federation trunk road, and in the British military bases in the north and east of the Island.

The government of Singapore has attempted to develop rural Singapore in recent years. One example of the development was the establishment of numerous housing estates in the rural areas so as to relieve the congestion within the city. Although these developments led to a greater density of settlement in rural Singapore, the principal concentrations still located along the main trunk road and in the north-east and east of the Island.

Generally speaking, Malaya has been a highly urbanized country (Table 4.6) for the last fifty years. Twenty-three per cent of the country's population in 1911 was urban, and by 1947 it had increased to 35 per cent. In addition there was a good deal of what has been termed "population clotting" in the food producing and dormitory areas around the towns. If these clusters were included in the urban population then the proportion of urban dwellers in the total population would have been even higher.(8) In comparison, about 15 per cent of the total population of South-East Asia was estimated to be urban in 1947, while only 10 per cent of Indonesia's population was classified as urban.(9)

---

(8) See del Tufo, M.V., "Malaya: A Report on the 1947 Census of Population" (London, 1949), pp. 43-44.

(9) See Ginsburg, Norton S., "The Great City in South-East Asia" (The American Journal of Sociology, March, 1955), p. 455.

Table 4.6. Percentage of urban* population in selected countries

Country	Year	Percentage
Japan	1963	44.7
United Kingdom	1964	35.1
W.Germany	1963	33.2
Netherlands	1963	32.0
Italy	1963	26.0
Denmark	1963	22.4
Malaya	1957	20.6
Federation	1957	10.8
Singapore	1957	63.1
France	1962	17.9
Philippines	1960	10.9
S. Viet-Nam	1962	10.5
Indonesia	1961	9.9
Laos	1962	8.8
Pakistan	1961	7.3
Thailand	1963	7.2
Burma	1957	5.6
Ceylon	1963	4.8

*City of 100,000 and more inhabitants.

Source: U.N., Demographic Yearbook, 1964.

The high proportion of urban dwellers in the population of Malaya was further increased following the declaration of the Emergency in 1948.(10) The campaign against the communist bandits necessitated the movement of some 580,000 rural dwellers of the Federation into 536 nucleated settlements, called "New Villages". These were located along the main roads for convenience of

(10) A state of emergency, later popularly referred to as "The Emergency", was proclaimed on 16th June 1948 following the discovery of a communist plot to overthrow the Government. This state of affairs ended twelve years later on 31st July, 1960.

administration, access and supervision.[11] They varied in size; twelve of them contained 5,000 or more inhabitants; another 162 had between 1,000 and 5,000 dwellers. In terms of numbers the resettlement programme, together with the normal growth of the population and the establishment of satellite and dormitory centres like Petaling Jaya in Selangor and Princess Elizabeth (Housing) Estate in Singapore, increased the number of urban centres from 187 to 444, and the proportion of urban dwellers in the total population increased from 35.1 to 47.6 per cent (Table 4.7). This represents an increase of 79 per cent in the total urban population of the country during the decade 1947-57, compared with the 60.3 per cent increase during the preceding sixteen year period of 1931-47.[12]

Malaya is already the second highest urbanized country in Asia and the foregoing figures indicate the rapid progress of urbanization that is still taking place. This trend will, in all probability, be even more marked in future. In the first place, there will be the normal growth of the existing urban population, which is increasing at a much faster rate than both the rural and the total population. This is particularly true of the Federation.

---

(11) See "Resettlement and the Development of New Villages in the Federation of Malaya, 1952". Minutes of the Legislative Council of the Federation of Malaya with Council Papers for the period March, 1952 to February, 1953 (Kuala Lumpur, 1954), Paper No. 33. Corry, W.C.S., "A general Survey of New Villages: A Report to the High Commissioner for the Federation of Malaya, 12th October, 1954. (Kuala Lumpur, 1954), and Kernial Singh Sandhu, "Emergency Resettlement in Malaya" in "The Journal of Tropical Geography" Vol. 18. August 1964, pp. 157-183.

(12) See del Tufo, M.V., "Malaya: A report on the 1947 Census of Population" (London, 1949) p. 43.

Table 4.7. Urban population in Malaya.

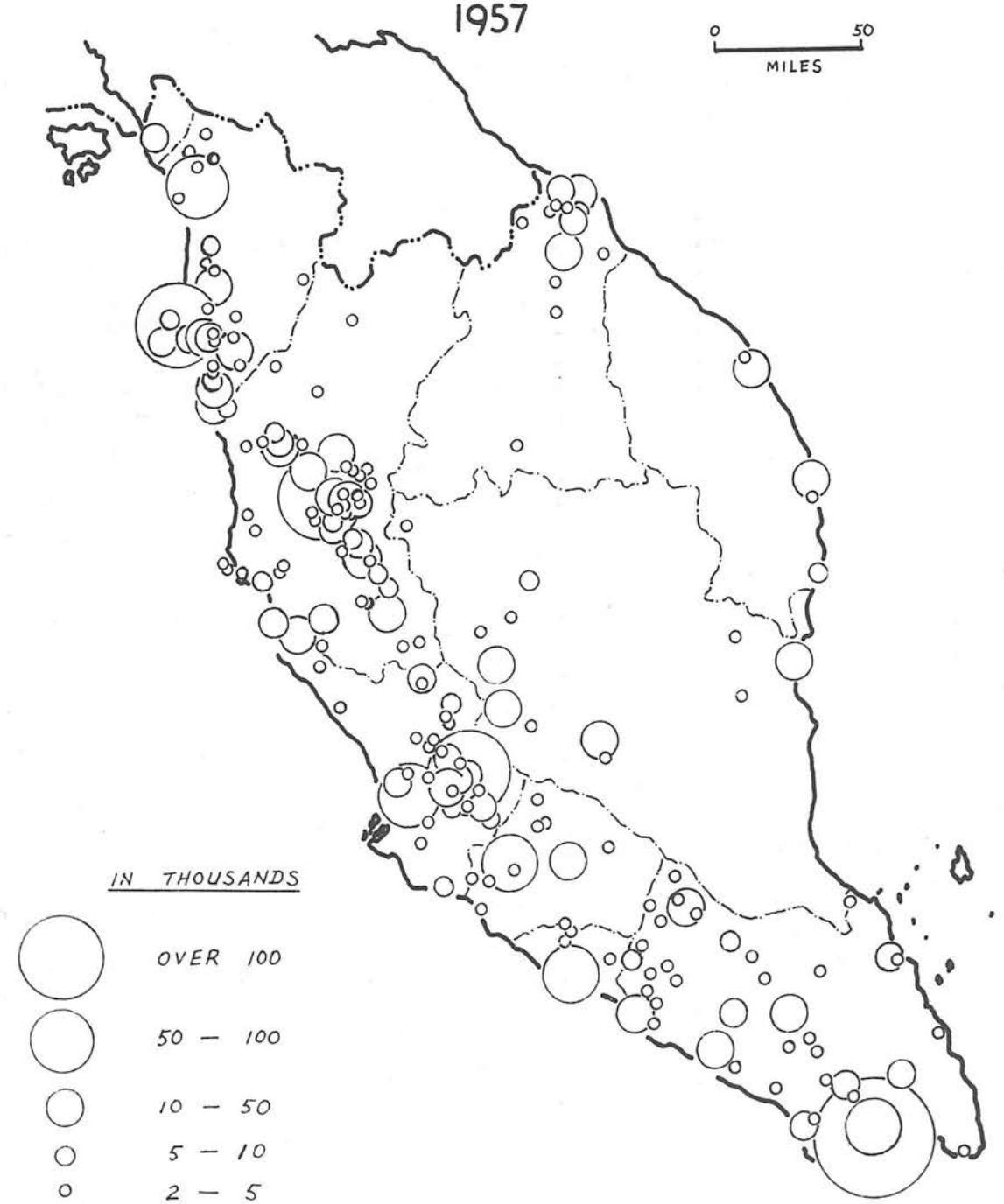
State	Total Urban Population (1957)	Percentage Urban		Number of Towns*	
		1947	1957	1947	1957
Penang	366,882	56.2	64.1	10	21
Malacca	84,432	26.3	29.0	6	8
Perak	601,057	29.5	49.2	47	109
Selangor	611,553	38.3	60.4	20	65
Negri Sembilan	119,522	22.3	30.7	9	26
Pahang	127,651	14.4	36.0	9	27
Johore	378,211	22.6	40.8	26	65
Kedah	162,784	13.8	16.6	16	35
Kelantan	114,994	7,9	22.1	6	23
Trengganu	82,447	23.5	29.6	11	18
Perlis	8,620	9.0	9.5	3	3
Federation	2,658,153	26.5	34.4	163	400
Singapore	1,019,500	80.0	70.5	24	44
Malaya	3,677,653	35.1	47.6	187	444

*Towns with 1,000 or more persons are included in this column.

For example, while the rural and the total population of the Federation increased by only 0.4 and 27.9 per cent respectively during the 1947-57 period, the urban section was more than doubled (Table 4.8). Secondly, attracted by the social amenities and economic opportunities of rapidly d eveloping urban centres, the continuous drift of rural dwellers to the towns shows no signs of abating. Thirdly, the progress of industrialization is accompanied by the creation of an increasing number of industrial estates on the fringes of established urban centres like Johore Bahru, Kuala Lumpur, Ipoh, and Jurong

FIG 30

PATTERN OF TOWN DISTRIBUTION 1957



BASED ON THE POPULATION CENSUSES. 1957.

Table 4.8. Comparative growth of urban and rural population (increase between 1947-57).

		Federation	Singapore	Malaya
Actual Numbers of Increase	Total	1,370,677	505,105	1,875,782
	Urban	1,356,777	266,763	1,623,540
	Rural	13,900	238,342	252,242
Percentage of Increase 1947-57	Total	27.9	53.7	32.1
	Urban	104.3	35.4	79.0
	Rural	0.4	126.7	6.6

in Singapore. Many of the larger of these establishments will have all the characteristics of complete urban centres. Finally, the Federal Government's rural land development schemes are centred around planned and compact self-contained village settlements. Many of these are already thriving miniature towns, while others are the nuclei of potentially similar centres.(13)

The above picture of an ever increasing urbanization of the population in Malaya is even more remarkable in view of the fact that, with the possible exception of some of the larger centres such as Singapore, Penang and Kuala Lumpur, the towns of Malaya are predominantly servicing centres. The importance of the major urban centres, including Singapore, Penang, Kuala Lumpur and Ipoh, (Fig. 30) in accounting for the high rate of urbanization should not be under-estimated. One third of the two million urban dwellers of Malaya in 1947 were in the city of Singapore. Another 22 per cent were in Kuala Lumpur, Penang and Ipoh. Thus these four major urban centres between them had more than half the total urban population of the country.

(13) Findings of a field survey, carried out by Kernial Singh Sandhu in August 1960, of the State and Federal Land Development Schemes in Malacca.

Though still retaining their position as the major urban centres of the country, their importance relative to the total urban population is, however, declining. This is largely because of (i) the growth of suburban and satellite dormitory and industrial areas and the resultant "siphoning" of city populations by such centres; (ii) the creation of more towns by the resettlement programme and (iii) the comparatively more rapid growth of the smaller towns.

In 1957, Singapore contained 24.8 per cent, and the four major urban centres together had 43.2 per cent of the total urban population of Malaya compared with 33 and 54.8 per cent respectively in 1947.

With increasing urbanization the rural population has tended to become numerically less significant. This trend was accelerated by the Resettlement Scheme and the continuous drift of rural dwellers to urban centres. The Federal Government's rural land development schemes are having similar effects upon the rural population as the resettlement programme had in the early nineteen-fifties. Most of the pioneer settlers in these miniature towns are former rural dwellers. The combined effect of all this will probably be that in time the number of the dispersed rural dwellers in Malaya will be very much reduced, and it is even possible that they will be eliminated from the Malayan landscape.

The highest rural numbers are generally in quite different regions from those of the urban concentrations. For example, of the 3,800,000 rural inhabitants of the country in 1947 only 5 per cent were in Singapore Island, compared with the latter's share of 11 per cent of the rural population. (Table 4.9).

Table 4.9. Percentage of total urban and rural population.

State	Percentage of Total Urban Population		Percentage of Total Rural Population	
	1947	1957	1947	1957
Penang	19.4	13.8	5.5	5.5
Malacca	4.8	3.2	4.7	5.7
Perak	21.6	22.6	18.7	17.1
Selangor	20.9	23.0	12.1	11.2
Negri Sembilan	4.6	4.5	5.8	6.7
Pahang	2.7	4.8	5.9	5.2
Johore	12.8	14.2	15.8	15.2
Kedah	5.9	6.2	13.3	14.9
Kelantan	2.7	4.3	11.5	10.8
Trengganu	4.1	3.1	4.8	5.4
Perlis	0.5	0.3	1.9	2.3
Federation	100.0	100.0	100.0	100.0
Singapore*	27.7	36.6	4.9	10.5

* For Singapore, the figures represent respectively the Percentage of total Urban and Rural Population of Malaya.

A notable feature of the rural population distribution in the Federation in 1957 was that the Eastern States had a slightly higher proportion of the total rural population than they had of either the total or the urban population, reflecting the low degree of urbanization in these areas. The majority of the rural dwellers were, however, in the Western States, closely following the pattern of the distribution of the total population.

With the movement from the city area, supplemented by the normal growth of the rural population, Singapore's share of the total rural inhabitants of

Malaya increased from 5 per cent in 1947 to 10.5 per cent in 1957 (Table 4.9). The rural population of Singapore is more evenly dispersed than that of the Federation. With the rapid increase in the total population even the low-lying western areas of Singapore were being settled by 1957. The largest numbers of rural dwellers were, however, still in the more intensely developed north-eastern and eastern sections of the Island. With 2,300 persons to the square mile in the rural areas in 1957, Singapore had by far the highest rural densities in Malaya.

In all, the population of Malaya by 1957 numbered 7,724,690 persons, giving a density of 152 persons per square mile. (Table 4.10). Overall density

Table 4.10. Density of population in Malaya.

State	Area in square miles	Density per square mile
Johore	7,330	126.4
Kedah	3,660	191.8
Kelantan	5,750	87.9
Malacca	640	455.0
Negri Sembilan	2,565	142.1
Pahang	13,873	22.6
Penang	398	1,438.2
Perak	7,980	153.1
Perlis	310	293.2
Selangor	3,166	319.9
Trengganu	5,028	55.3
Federation	50,700	128.8
Singapore	225	6,426.3
Malaya	50,925	151.6

figures in Malaya are, however, of little significance, since large parts of the country are still virtually uninhabited while in others the distribution is very uneven. The most striking contrast is between the heavily populated island port of Singapore with a population density of over 6,000 per square mile and the relatively sparsely settled States of the Eastern coast of Malaya (Table 4.10).

Almost as important as the features of total population distribution is the distribution of the main ethnic communities. The principal contrast is between the concentration of the Chinese in urban centres and the Malays in the rural areas. The Chinese form over fifty per cent of the population in almost all the large urban centres in Malaya. According to the 1957 Census report, 64 per cent of the bulk of the urban population in the Federation and 78 per cent in Singapore are Chinese (Table 4.11). Besides comprising more than half of the population in most of the cities and towns, the Chinese are found in considerable numbers in many rural districts. These districts are invariably among those which are most developed by Western standards. Some are rubber-growing districts, but many are mining areas. Without exception these districts are located along the western littoral. Those with the heaviest concentrations of Chinese are extensions of the great population clusters in Penang, Ipoh, Kuala Lumpur, and Singapore.(14)

Malays are primarily rural; they shun, however, estates and activities associated with a wage economy in general; only recently have they begun to move to the larger towns of Malaya. They predominate in those districts in the high-density areas of the west coast which are largely agricultural, and in general in the east and north of Malaya. (Fig. 31).

---

(14) See Appendix VI.

FIG 31
DISTRIBUTION OF ETHNIC GROUPS BY STATES 1957

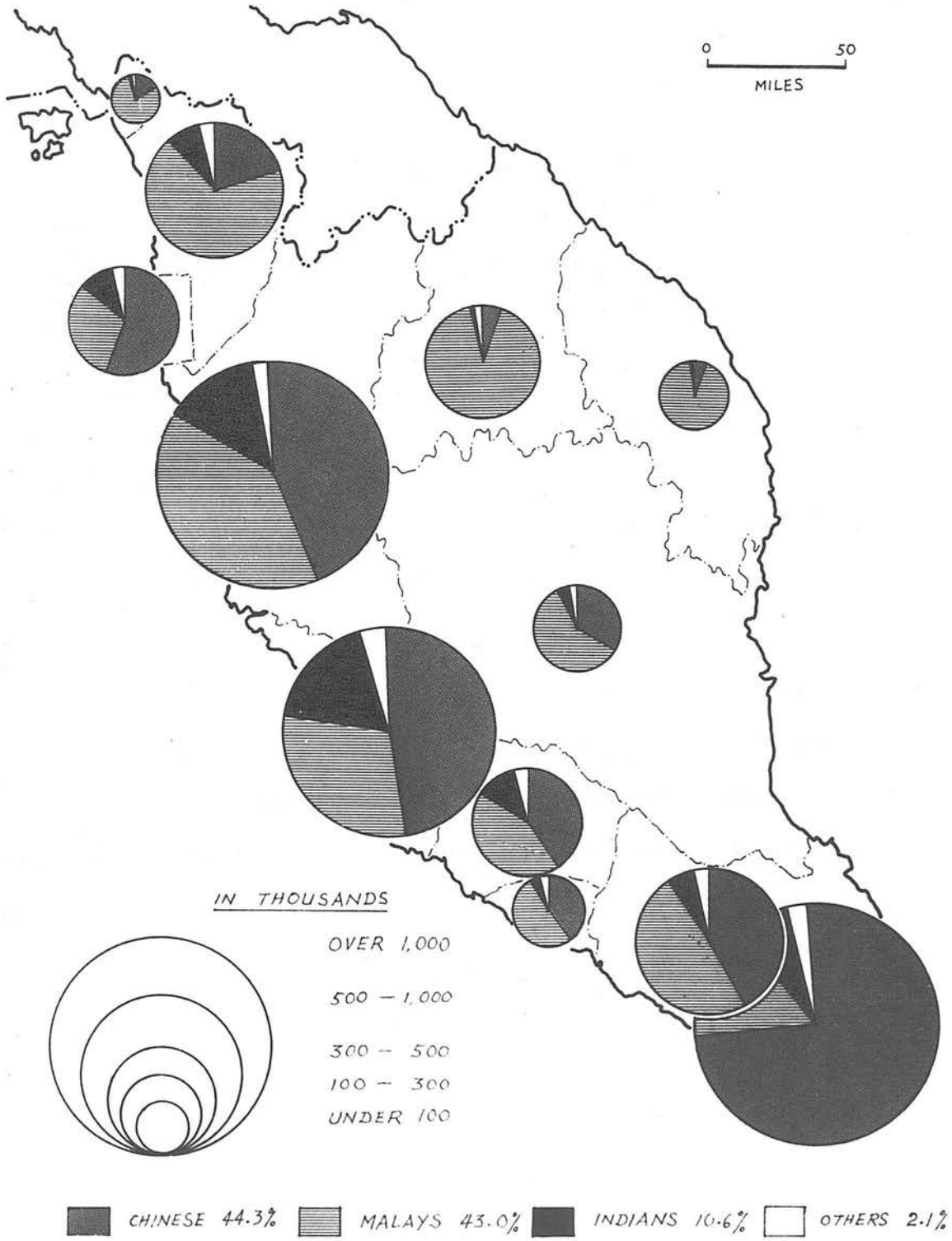


Table 4.11. Racial composition of urban population*.

State	Chinese	Malays	Indians
Johore	67.4	23.8	6.0
Kedah	54.7	32.7	10.9
Kelantan	16.8	80.1	2.1
Malacca	74.7	14.8	7.4
Negri Sembilan	64.8	17.7	12.4
Pahang	64.8	25.5	7.1
Penang	70.6	13.7	13.7
Perak	71.5	14.1	12.1
Perlis	46.5	43.5	9.0
Selangor	67.1	14.4	14.4
Trengganu	16.2	81.4	1.8
Federation	63.9	22.6	10.7
Singapore	77.7	11.2	8.7

*Urban areas of 1,000 population and over.

"There are two kinds of distribution of Malays. The first consists of areas that are not only predominantly but almost exclusively Malay. Some of these have high population densities and total numbers; others have low densities and total numbers. This type of Malay settlement is found along the east coast, the interior, and the northwest coast. Along much of the west coast, where the effects of colonialism and immigration have been felt most strongly, a second type of Malay population distribution is evident. Here, the Malays are found in the rural areas, leading a Malay way of life. Around them are the cities, estates, and mining districts, with large numbers of people of other ethnic origins living entirely different kinds of lives.

Here are found districts in which both total numbers and densities of Malays are high, but in which the proportion of Malays is low in relation to those of the other ethnic groups."

In Malaya as a whole, the Malays represented only 19 per cent of the urban population while they constituted over two-fifths of the total population in 1957. Malays, in contrast to the Indians and Chinese, form larger proportions of the population in the towns and villages under 20 thousand than they do in the towns and cities of more than 20 thousand. Only two cities in Malaya with more than 20 thousand inhabitants, Kuala Trengganu and Kota Bharu, have over 50 per cent Malays. (See appendix VI). These are both in the northeast. Even Alor Star in north Kedah, amid districts that are generally more than 80 per cent Malay, has a population which is 48 per cent Chinese and 12 per cent Indians. (See appendix VI). In short, the Malay population is located principally in the rural areas of Malaya, notably in the two rice bowl areas of Kedah and Kelantan.

The Indians in Malaya form a much smaller group than either the Chinese or Malays. (Table 4.1). They are found in significant numbers only in the west-coast concentration of population, mainly in the north about Penang and in the bordering districts of Kedah and Perak, in Selangor and southern Perak, in Negri Sembilan, Johore and in Singapore. About 93 per cent of the Indians in 1957 were found in these States.

More than two-fifths of the Indians of Malaya are urban dwellers, with the remainder living in the country (See appendix VI). In 1957 almost 75 per cent lived in towns of more than 20,000 inhabitants. Urban Indians are somewhat less concentrated in the four major cities (City of Singapore,

Kuala Lumpur, City of George town and Ipoh) of Malaya than are uban Chinese. Nevertheless, about 45 per cent of the urban Indians lived in these four cities (see appendix VI). The five largest cities (including Klang in Selangor) in Malaya had over half of the urban Indians; no other city in Malaya had as many as ten thousand. In general, Indians are not numerous in the towns and villages of less than ten thousand inhabitants.

The remaining three-fifths of the Indian population in Malaya are largely associated with the rural estate economy. "Over two-thirds of the rural Indians in Malaya are estate dwellers. They are found chiefly in a central concentration extending from the southern districts of Perak through Selangor and including two northern districts of Negri Sembilan. Most are found in the coastal districts of Selangor and in southern Perak. These coastal districts are highly developed rubber-producing areas. Other concentrations of Indians are found in parts of Penang and in bordering districts of Perak and Kedah. Other groups of Indians are to be found in Johore, although total estate populations of Indians do not approach those of either Perak or Selangor. It is chiefly in Selangor that the Indian population forms a significant proportion of the total population."* (Table 4.12).

---

* See H. Sendut, 'Patterns of Urbanisation in Malaya'; and also, K. S. Sandhu, 'The population of Malaya: Some changes in the pattern of distribution between 1947 & 1957'; and 'Emergency resettlement in Malaya'.

Table 4.12. Distribution of racial composition by percentage.

State	All races	Chinese	Malays	Indians	Others
Johore	12.0	42.3	47.9	7.5	1.9
Kedah	9.1	20.5	67.7	9.5	2.1
Kelantan	6.5	5.5	91.6	0.9	1.5
Malacca	3.8	41.2	49.1	7.9	1.3
Negri Sembilan	4.7	41.2	41.4	14.8	2.3
Pahang	4.1	34.5	57.1	6.9	1.2
Penang	7.4	57.2	28.8	12.0	1.8
Perak	15.8	44.1	39.6	14.5	1.5
Perlis	1.2	17.3	78.4	1.6	2.5
Selangor	13.1	48.2	28.7	19.8	3.1
Trengganu	3.6	6.5	92.0	0.9	0.4
Federation	81.3	37.2	49.7	11.1	1.9
Singapore	18.7	75.4	13.6	8.6	2.4
Malaya	100.0	44.3	43.0	10.6	2.1

Economic aspects of Population

In Malaya, more than half of all persons working for their living derive their livelihood from developing and exploiting the natural resources of the country; over half of these are employed in the planting industries or the industries associated with the processing of agricultural produce. This illustrates the predominantly agricultural economy of the nation. More than 155,000 persons or about 6 per cent of the working population is employed in governmental or quasi-governmental pursuits. In considering these ratios, it should always be remembered that almost sixty per cent of the population is under the age of twenty-one years, the school population comprising about

one-fifth of the whole population. Another one-fifth is under the age of seven years. Only some 56,000 persons of under fifteen years are in paid employment, but this figure does not of course include the children of small-holders and small businessmen, who not infrequently help their parents in their leisure moments. The unemployment is not a serious problem, at any rate for the present; but the rapidly expanding population will certainly cause employment problems in the future. The principal problem today is perhaps under-employment rather than unemployment proper.

According to the 1957 Censuses of both the Federation and Singapore, the total population amounted to 7,724,687. Of these 5,170,183 persons or 67 per cent are 10 years of age or over. Their distribution by economic activity status is shown in Table 4.13. Just over half of the persons 10 years old or over are economically active, and of these over 97 per cent were returned as working, leaving 2.4 per cent not working but looking for work. The economically inactive comprises 58.4 per cent housewives and other home house-workers, 32.1 per cent full-time students, 0.8 per cent inmates of institutions, 2.1 per cent pensioners and other persons with private means, and 6.6 per cent in the category "others" made up largely of unpaid social workers and persons who are unable to work because of age or physical disabilities. There is also in this last category a small number of persons whose economic activity status is not stated.

The comparison with Singapore shows a much smaller per cent of persons not working but looking for work, a smaller per cent of persons in the (15)

---

(15) The unemployed persons in Singapore can also be classified into the two groups, namely persons who have previously worked (3.3%) and those who have never previously worked (1.7%). The failure in the Federation to provide for the enumeration of the second group may have resulted in a number of them being included in the economically inactive category.

Table 4.13. Distribution of the population by economic activity status and sex.*

Category	Total Persons	Percentage		
		Total	Male	Female
Total population	7,724,687			
Persons aged 10 and over	5,170,183	100.0	100.0	100.0
Economically active	2,645,128	51.1	75.1	24.9
Economically inactive	2,525,055	48.9	24.9	85.1
Economically active	2,645,128	100.0	100.0	100.0
Persons working	2,582,247	97.6	97.4	98.1
Persons not working but looking for work	62,881	2.4	2.6	1.9
Economically inactive	2,525,055	100.0	100.0	100.0
Housewives and other home houseworkers	1,474,790	58.4	5.4	77.6
Full-time students	810,023	32.1	75.4	16.4
Inmates of institutions	20,762	0.8	2.2	0.3
Pensioners and persons with private incomes	52,595	2.1	5.0	1.0
Others	166,885	6.6	12.0	4.7

*This consists of persons aged 10 and over.

category "others" of the economically inactive, and a larger per cent of pensioners and other persons with private incomes. There is a correspondingly larger per cent of employed persons in the Federation, while the proportions of persons in the remaining groups of the economically inactive are more or less similar in the two areas.

In the analysis by sex, as compared to Singapore the Federation males have a smaller proportion economically active while the Federation females have a larger proportion economically active. Among the economically active,

all but 1 per cent of the females were enumerated as employed. The large number of women helping on the farms and, owing to the vagueness of definitions, having themselves reported as working probably irrespective of the amount of work done, can be a contributing factor towards this result. In any case in both the males and the females there seems to be an overestimation in the statistics of employment.

Among the economically inactive, the student category corresponds in proportion to the same category in Singapore, and the reasons for the sex differentials are probably the same in both areas, namely that the low ratio of female students is due to (i) early age at which girls marry, (ii) economic considerations particularly in large families, and (iii) shortage of school-building facilities. Both the males and the females in the Federation also show a larger proportion of pensioners and a smaller proportion of the residual category of economically inactive as compared with Singapore, with the females having slightly more influence than the males in either category. On the other hand, "there seem to be proportionately more male home houseworkers than in the case of Singapore, over 6 per cent of the males economically inactive in the Federation being home houseworkers as compared to under 2 per cent in Singapore."

As Malaya is a multi-racial country, to analyse the economic structure of the population, it would be useful to some extent to study the variation among the ethnic groups. Table 4.14 shows a detailed analysis of this nature relating to economic activity status. Only the three major ethnic groups are taken into consideration in this analysis for the reason that the remainder comprises a number of minor heterogeneous groups the analysis and

Table 4.14. Economically active population by Ethnic groups and sex.

Race	Male			Female		
	Persons*	Economically Active	%	Persons*	Economivally Active	%
Chinese	1,186,938	850,980	71.7	1,116,576	267,147	23.9
Malays	1,092,568	824,962	75.5	1,105,470	256,034	23.2
Indians	348,735	292,236	83.8	202,040	83,728	41.4

*Persons aged 10 and over.

interpretation of which as one single group would not be of any significant meaning or usefulness. In any case the Malays, Chinese and Indians aged 10 and over numbered 4,580,481, and this is nearly 98 per cent of all persons aged 10 and over in Malaya.

For Malaya as a whole, the Chinese males have a smaller proportion of economically active compared to the Malay males, while the proportion of the Chinese females economically active is a little more than that of the Malay females. (Table 4.14). The larger proportion of Malays engaged in agriculture and living on farms may be a reason for the difference; other reasons include the larger number of Chinese youths who are in schools and probably a somewhat larger number of Chinese who have independent means of livelihood.(16)

(16) Although the number of Malays aged 10 and over is about 2.5 million compared to about 2 million Chinese, the number of Malays aged 10 and over who are students is about 306,600 compared to 426,000 in respect of Chinese of the same category.

(17)
The analysis by states shows almost an identical pattern in respect of the Chinese males as in the case of the Malays. That is, in the relatively rural and underdeveloped states there is a somewhat larger proportion of economically active as compared to the more developed states on the west coast. The position with regard to the Chinese females is not so clear-cut; the proportion of Chinese females economically active is the lowest in Penang with about 12 per cent, followed by Kedah, Perlis, Malacca, Trengganu and Singapore with percentages between 15 and 20, further followed by Kelantan, Selangor, Perak and Johore with percentages between 25 and 30, and topped by Negri Sembilan and Pahang with percentages around 40.

The proportion of Malay males who are economically active is larger than that of the Chinese males but less than that of the Indian males. (Table 4.14). For Malaya as a whole, about 76 per cent of Malay males 10 years of age and over are economically active, as compared to about 72 per cent in the case of the Chinese and 84 per cent in the case of the Indians.

Among the states there is some variation in the proportions of Malay male economically active. In the relatively rural states with large numbers of Malays along the east coast including Kedah and Perlis in the northwest, the proportion is between 75 and 80 per cent, while the rest of the states along the west coast tend to have proportions between 70 and 75 per cent. Malacca has the smallest proportion of 68 per cent, while Penang and Singapore has the largest proportion of 80 per cent.

The economic structure of the females is of course entirely different from that of the males, the proportion of economically active among the females being as a rule smaller than that of economically inactive (see appendix VII). The overall proportion of economically active among the

---

(17) See appendix VII.

Malay females in Malaya is about 23 per cent, and this is not very different from that of the Chinese females at 24 per cent. Both these proportions however are small compared to the Indian proportion of about 41 per cent.

The inter-state comparison in respect of the Malay females shows a variation similar to that of the Malay males, but to a somewhat greater extent. The east coast states have a relatively much larger proportion of economically active females, ranging between 25 and 35 per cent of their respective populations aged 10 and over, as compared with the west coast states. These states, with the exception of Negri Sembilan, have a corresponding proportion of only between 10 and 20 per cent, while Singapore has the lowest only about 6 per cent. This means also that the proportion of Malay economically inactive females is generally relatively smaller in the east coast states and larger in the west coast states.

The striking feature in respect of the Indians is that both the males and the females have a large proportion of economically active, larger than the other two major ethnic groups. (See appendix VII). This is particularly so in the case of the females.

The explanation for this feature is probably to a large extent economic. A large proportion of the Indians in the Federation are employed as labourers on estates, they tend to supplement their family income by sending their womenfolk to work and also by taking their children off schools to earn their living. A further factor is introduced by the return of many aged Indians to India, thus causing a smaller proportion of economically inactive to economically active.

The state analysis for the Indian males again follows the same pattern

as that for the Chinese and the Malays. In the case of the females, with the exception of Penang, Perlis and Trengganu, more or less the same pattern applies, namely, Selangor, Perak, Negri Sembilan, Johore and Malacca have proportions of female economically active between 45 and 55 per cent, while Penang, Kelantan and Kedah have proportions around and above 55 per cent. Penang had a proportion of 15 per cent and Singapore has only 7 per cent, but this is due to the fact that many Indians there are of the merchant class and therefore do not in many cases need to send their womenfolk to work or take their children off schools at an early age. Perlis and Trengganu both have rather small proportions, but the numbers of Indian females in these states are too small to affect the general picture.

Among the economically inactive population, the housewives and other unpaid home houseworkers, and students are the most important proportion, account for more than 90 per cent, and the remainder comprising pensioners and persons living on rents, inmates of institutions, and those too old or unable to work.

For Malaya as a whole, among the male economically inactive, those doing unpaid housework form a small proportion of about 5 per cent., the students form about three-quarters with the Chinese having the largest proportion and the Indians the smallest proportion. The remainder group makes up the rest, namely about 20 per cent for each of the ethnic groups.

In the category of housewives and unpaid houseworkers, the Malays have the largest proportion with over 80 per cent and the Chinese the smallest proportion with about 72 per cent. The proportion of students is higher for the Chinese and Indians than for the Malays.

The male students in the case of the Malays and Indians form a larger proportion in the western states (except Kedah and Perlis) than in the eastern states, while in the case of the Chinese, the proportion is fairly constant throughout all the states. This is probably a reflection of the emphasis the Chinese place on education for their children. The female students tend to have a similar pattern among all the three ethnic groups, namely, the relatively more developed states have a larger proportion of students than the less developed states.

Among the economically active population, it is worthwhile to make an analysis in more detail by industry.(18) The industry can be divided into three broad groups, namely, the primary industries, secondary industries and tertiary industries.(19) Table 4.15 shows that 51 per cent of the economically active are engaged in the primary industries, only 12 per cent in the secondary industries, and 37 per cent in the tertiary industries. The gradual process

Table 4.15. Percentage of main industrial groups (including all races)

Industrial Sector	1947		1957		
	Federation	Singapore	Federation	Singapore	Malaya
Primary	67.6	9.9	61.8	8.9	51.0
Secondary	7.8	17.6	9.7	19.5	11.7
Tertiary	24.6	72.5	28.5	71.7	37.3

(18) This analysis excludes 69,808 persons of other ethnic groups, 18,112 persons whose activities are not adequately described and 47,028 persons who are unemployed.

(19) Primary industries are defined to include agriculture (including rubber processing), mining, fishing, hunting and forestry; secondary industries include manufacture, building and construction; and tertiary industries include electricity, gas, water and sanitary services, commerce and finance, transport, storage and communication, professional, personal, defence and other services, including government services not classified elsewhere.

of industrialization which is gathering momentum is indicated by comparison with the industrial structure in 1947.

A further analysis of the industrial distribution by ethnic group is given in Table 4.16. The employment of the Malays is concentrated in the primary sector, while the Chinese comprise the largest ethnic group in both the secondary and tertiary sectors.

Table 4.16. Percentage of main industrial groups by races.

	Chinese	Malays	Indians	Total
Primary	35.3	72.0	49.4	52.7
Secondary	18.7	5.1	8.5	11.5
Tertiary	46.0	22.9	42.1	35.8
Total	100.0	100.0	100.0	100.0

The Malay communities tend to participate in the money economy as producers of primary commodities rather than as traders, merchants, or distributors, partly because agriculture and fishing are the only occupations with which they are familiar, and partly because they have little desire to venture into the unknown world of competitive business with its attendant hazards.

For example, the opening up and development of Malaya, at least in the initial stages, was achieved by the non-indigenous races - Europeans, Chinese and Indians. The Malays contributed little to the process. In this connection geographical factors played a significant part, for the fact that the core zone of development was along the foothill belt of western Malaya and away from the main areas of Malay settlement (which were in riverine-coastal

locations, more particularly in the north of the Peninsula), meant that Malay contact with the main stream of economic activities was reduced to the minimum.

The immigrant Chinese and Indians were immersed, from the start, in the trading and commercial as well as the primary productive sectors of the exchange economy. In this they were assisted to a considerable degree by possessing certain qualities typical of western transients, namely, the acquisitive spirit, the ability to make rational economic decisions concerning the present as well as the future, and to curb or delay the desire for present consumption in order to sink and invest savings into the productive process. These qualities enabled them to play a full part in the economic life of the country, and to settle down in occupations which in the course of colonial development had been left unoccupied by the Malays and by the British rulers. In none of these did they succeed so well as in commerce and finance, where they occupied positions in the major banking and commercial concerns down to the village general store. By nearly monopolising the business section of the Malayan economy down to the village level they were able to act as intermediaries between the commercial world and the Malays when the latter began to produce for outside markets.

The Malays, however, did not evince any interest in trade and commerce even after they had started to produce for the world markets. Those who did show an interest were handicapped from the start by their late entry. Lacking capital as they did, the only avenue in business left was in the small retail trades.

But here again several factors have worked against them. Their inadequate understanding of the working of the monetary economy, and consequent lack of business sense and experience, contributed to the failure of many small concerns*. The Director of Co-operation, for example, found, in the course of trying to develop marketing societies, that "the absence of business ability among Malay peasants made rapid development and expansion impossible"ø. Where in some cases they had both capital and the necessary experience, they discovered that they could not compete against the immigrant races because they did not have the business connections, and were soon pushed out of the trade.

Because of these factors the Malays, as a race, tend to be concentrated in occupations connected with actual production - agriculture and fishing - rather than with trade and commerce.

In terms of employment and output, primary industries is by far the most important sector, in which about 1,333,000 or 53 per cent of the economically active are engaged. Agriculture, including rubber production, is the most important occupation of the two ethnic groups of Malays and Indians, in particular indigenous Malays, while the Chinese has also a large proportion of over 35 per cent of the total economically active. The two largest sub-groups under agriculture are rubber and rice, employing over 624,000 and 438,000 workers respectively. Other important primary industries are mixed agriculture, fishing, tin, coconut and copra.

---

*These were among the more important reasons for the failure of many Malay companies in the postwar period. See D.E.M. Fiennes, "Report on Rural and Industrial Development Authority, 1950-55". (Kuala Lumpur, 1957) App.E. p. 52.

ø See T.F. Carey, "Federation of Malaya, Annual Report of the Director of Co-operation for the Year 1948". (Kuala Lumpur, 1949). p. 13.

Table 4.17. Percentage of ethnic groups by industrial groups.

Sector	Chinese	Malays	Indians	Total
Primary	29.2	57.2	13.7	100.0
Secondary	70.7	18.5	10.8	100.0
Tertiary	55.9	26.9	17.2	100.0
Total	43.3	42.0	14.7	100.0

In the primary sector the Malays comprise nearly 60 per cent of all workers (Table 4.17), and this is about twice the number of Chinese. There are also large and significant differences in the choice of occupation. It can be seen from Table 4.18 that 50 per cent of the Malays are rice farmers and only 34 per cent are engaged in the rubber industry, 54 per cent of the Chinese are employed in the rubber industry, 16 per cent in mixed agriculture, mainly cash crop vegetable farming, and 10 per cent in tin; and 83 per cent of the Indians are concentrated on rubber plantations. These marked preferences are reflected in the composition of the labour force in the individual industries. Thus 97 per cent of the persons engaged in rice growing, 68 per cent in fishing and 66 per cent in coconut and copra production are Malays, while 68 per cent of the persons engaged in mixed agriculture and 73 per cent in tin are Chinese.

With the sole exceptions of Singapore and Penang, agriculture plays a dominating role in the economic life of all the states, including the two rich mining states of Perak and Selangor. In general, the states can be divided into two groups, the more developed and richer rubber-growing and

Table 4.18. Percentage analysis of persons economically active in the primary industries.

	Chinese	Malays	Indians
Number of persons:-	388,205	762,457	182,358
Agriculture, forestry, hunting and fishing:-			
Rice	2.4	50.1	0.3
Mixed agriculture	16.4	3.1	0.6
Fishing	5.9	5.7	0.2
Others	8.3	1.7	1.6
Agricultural products requiring substantial processing:-			
Rubber	53.9	34.3	82.8
Coconut, Copra.	1.2	3.4	5.1
Others	1.2	0.4	5.6
Mining and quarrying:-			
Tin	9.4	1.0	2.9
Others	1.3	0.3	0.9
Total:-	100.0	100.0	100.0

tin-mining states comprising Selangor, Perak, Negri Sembilan, Johore, Malacca and also Penang, and Singapore; and the less developed rice-growing states of Pahang, Trengganu, Kelantan, Kedah and Perlis. The latter groups have more than 70 per cent of total economically active population engaged in the primary sector, while the former groups have less than 70 per cent, ranging from 9 per cent in Singapore and 32 per cent in Penang to 67 per cent in Negri Sembilan.

The ethnic group distribution in the states is of economic significance. The preference of the Chinese and Indians to sell their labour for an economic

wage accounts for their concentration in the rubber-growing and tin-mining states; on the other hand, the Malay population in the rice-growing states is a very large majority and confirms the Malay preference for subsistence farming. (Fig. 31).

It has been suggested[20] that the sentimental paternalism of British rule has been instrumental in fossilizing the Malay social structure, but there are also economic factors which account for the failure of the Malays to adapt themselves to the changing economic environment. Their economic immobility results partly from their dependence on the Chinese middlemen who supply them with credit facilities, particularly on the east coast, the lack of any market organisation to assist in the disposal of their crops, and over-specialisation, for example, in the often ingenious methods of Malay fishermen.

Table 4.19 shows the detailed analysis in respect of the secondary industries sector by ethnic groups. About 290,000 persons or only 12 per cent of the economically active are engaged in this sector comprising manufacture and building; of these 31 per cent are in the building and construction sub-sector. These facts highlight two points, that by 1957 the industrialisation programme[21] has not made much headway, and secondly, a large part of the capital formation in the country is in new buildings and construction works.

---

(20) See "Paths to Statehood", The Economist, September 3, 1960, p. 872.

(21) Considerable industrial development has taken place since 1958 with Government assistance. Apart from technical assistance, this has largely taken the form of granting pioneer status to new industries which entitles them to a limited period of two to five years' tax holiday.

Table 4.19. Percentage analysis of the economically active in the secondary industries.

	Chinese	Malays	Indians
Number of persons:-	205,603	53,981	31,357
Manufacturing:-			
Food and fodder	8.9	6.1	8.1
Wood	10.1	6.2	1.9
Footwear, wearing apparel & textile	15.3	10.8	7.0
General engineering	14.7	5.0	7.8
Others*	26.6	28.2	21.6
Total	75.6	56.3	46.4
Building & Construction:-	24.4	43.7	53.6
Total	100.0	100.0	100.0

* The other sector of manufacturing including:-

Beverage industries, Tobacco manufactures, Manufactures of furniture, Manufacture of paper products, Printing, publishing and allied industries, Manufacture of rattan, mengkuang and attap products, basket-ware and coir mats, etc., Manufacture of rubber-products, Manufacture of chemicals and chemical products, Manufacture of non-metallic mineral products, Basic metal industries, Manufacture of metal products, except machinery and transport equipment, Manufacture and repair of electrical machinery and appliances and Miscellaneous manufactures.

In the manufacturing sub-sector, the important industries are general engineering and footwear, wearing apparel and textile. Each of these two industries employs over 30,000 persons while employment in the manufacture of food and fodder and the manufacture of wood are slightly under this figure.

Because of the poor participation of the Malays, about 71 per cent of those employed in the secondary industries are Chinese. In the manufacturing industries there are about 155,000 Chinese workers in contrast to only 30,000 Malays and 15,000 Indians. The employment pattern in these industries is largely determined by the Chinese, who are mainly employed in motor garages and repair shops, foundries, welding work-shops, sawmills, and joinery works, and in the manufacture and repair of footwear, tailoring, dressmaking, and furniture. The textile industry is insignificant and this is surprising in view of its widespread development in neighbouring countries with common economic characteristics, for example, India, Japan and Hong Kong. The explanation can be found mainly in the lack of technical know-how. There is also a conservatism in the local Chinese entrepreneur which is a limiting factor on investment outside the traditional fields of wholesale and retail distribution and the rubber and tin industries.

A large proportion of the Malays are engaged in the traditional Malay crafts, such as the production of basket-ware. There are therefore important differences between the Malays and the Chinese in their preferences for industrial employment, the scale of production, and the occupational status of those engaged in the manufacturing sub-sector.

The more industrialised states are also those which have a large urban population. The number of persons employed in the secondary industries sector in the five states, Singapore, Selangor, Perak, Penang and Johore is

about 225,000 (Singapore contributes 91,000); this is about 77 per cent of the total employment in this sector in the whole country. The importance of Johore and Perak, however, lies chiefly in their large population.

The employment pattern in the sector, with the large number of Chinese in the manufacturing industries and the preference of the Malays and Indians for site work is similar in nearly all states, excepting Kelantan and Trengganu. In these two states, because of their underlying population structure, the economically active comprise in the main Malays. Small differences in the employment pattern of the ethnic groups are also discernible between states. Generally there seems to be less uniformity with the Malays and Indians. For example, the proportion of Malays in the sector who are engaged in manufacture varies from 33 per cent in Negri Sembilan to 70 per cent in Trengganu, while there are relatively more Malays and Indians in the engineering industry in Selangor compared with other states.

Employment in the heterogeneous tertiary industries accounts for 905,000 persons or 36 of the economically active. Over 40 per cent of both the Chinese and Indian economically active are in tertiary employment compared with only 22 per cent of the Malays.

The employment of both the Chinese and Malays in the sector is concentrated in a few industries, but there are marked industrial preferences as shown in Table 4.20. About 78 per cent of the Chinese employment is concentrated in four industries, retail trade, personal services mainly of a domestic nature, transport, and education and health services. Nearly 81 per cent of the Malays are employed in sundry government services, the education and health services, retail trade and transport. The Indian pattern is more diffused;

Table 4.20. Percentage analysis of the economically active in the tertiary industries.

	Chinese	Malays	Indians
Number of persons:-	505,916	243,339	155,771
Electricity, gas & water:-	0.9	2.1	4.4
Commerce:-			
Retail trade	35.8	13.0	26.3
Others	8.1	2.9	5.6
Transport storage, Communication:-	12.4	14.1	15.0
Services:-			
Government Services, n.e.c.*	5.8	39.7	18.7
Community services	8.7	14.3	10.5
Personal services	21.4	9.0	15.2
Others	6.4	4.9	4.3
Total:-	100.0	100.0	100.0

* Not elsewhere classified. This column also includes police and armed forces.

retail trade is their most important tertiary activity, and other important groups are personal services, transport, the police and armed forces, and the education and health services. Generally, the employment patterns of the Chinese and Indians bear strong resemblances, though the Chinese display a marked preference for trade and a traditional dislike for the armed forces. The Malay pattern differs widely with its concentration in the police and armed forces and the small numbers in commerce and domestic service.

The important states in this sector are again those in which there is a substantial urban population. In terms of numbers employed, these are

Singapore, Selangor, Perak, Penang, and Johore, which together account for over 75 per cent of all tertiary employment, particularly in Singapore, which accounts for more than 70 per cent of the total industrial groups. For Malaya as a whole, the rubber-growing states have supported a greater degree of development in the tertiary sector than the rice-growing states.

"It is also useful to have a comparison study between the Federation and Singapore. The economic structure in the two areas is almost identical in many important respects. About 66-67 per cent of the population are 10 years of age and over, and broadly about one half of the persons 10 years of age and over are economically active in both areas. According to the census statistics 5 per cent of the economically active in Singapore are unemployed compared with slightly under 2 per cent in the Federation, but there are strong grounds for believing that both figures are underestimates; in particular the Federation figure.

In the economically inactive sector the similarities are more striking than the differences. In both territories 90 per cent of the inactive comprise two categories, the housewives and the full-time students. About 75 per cent of the inactive males who are 10 years old and over in the Federation and about 77 per cent in Singapore are full-time students. The corresponding ratios for female students are also similar at 16 per cent and 17 per cent respectively. In view of the large females sectors in both territories, however, these student ratios are somewhat deceptive. In the Federation there is in fact one full-time female student to every two male students and in Singapore the proportion is two to three.

The industrial structure in the two areas, as expected, is very different. The economy of the Federation is oriented towards the primary sector and that of Singapore towards the tertiary industries. These patterns have been developed against the historical background of a pan-Malayan political and economic unity, when Singapore was an entrepot serving the Federation as the importer of manufactured goods and the outlet for Malayan produce. Both territories are anxious to remould their one time complementary but now independently accentuated industrial structures and, in particular, to promote the growth of manufacturing industries as a major solution to the problem of providing employment for the increasing population.

Penang has also an entrepot economy, but it has not been developed to the same extent as that of Singapore. Thus, while there are greater resemblances between Singapore and Penang than between them and other states in the Federation, the differences are still marked. About 30 per cent of the employment in Penang are in the primary sector compared with less than 10 per cent in Singapore.

So far as a direct comparison can be made, the preferences of the main ethnic groups in their industrial employment bear strong resemblances in the two areas. Thus in the primary sector the Chinese show a preference for mixed agriculture and cash crop vegetable farming and the Malays for subsistence farming and fishing.

In the secondary industries sector, there are relatively more Malays and Indians in building and construction; this is more noticeable in the Federation where there is considerably more construction work in progress. In the manufacturing industries the Chinese are employed in general engineering and

the manufacture of footwear, made-up textile goods, wood and furniture. In neither area has there developed a spinning and weaving industry on any large scale.

The manufacturing employment pattern of the Malays in the Federation is more complex. In a few states where the economically active are predominantly Malays, for example, Kelantan and Trengganu, they supply the factory labour force for the manufacturing industries. But in other states where Chinese labour is also available, such employment appears to comprise mainly the Chinese. A large proportion of the Malays are engaged in the traditional Malay crafts, such as the manufacture of rattan, mengkuang and attap products, baskets, silverware, etc. By contrast, the employment pattern of the Malays in Singapore is more diversified.

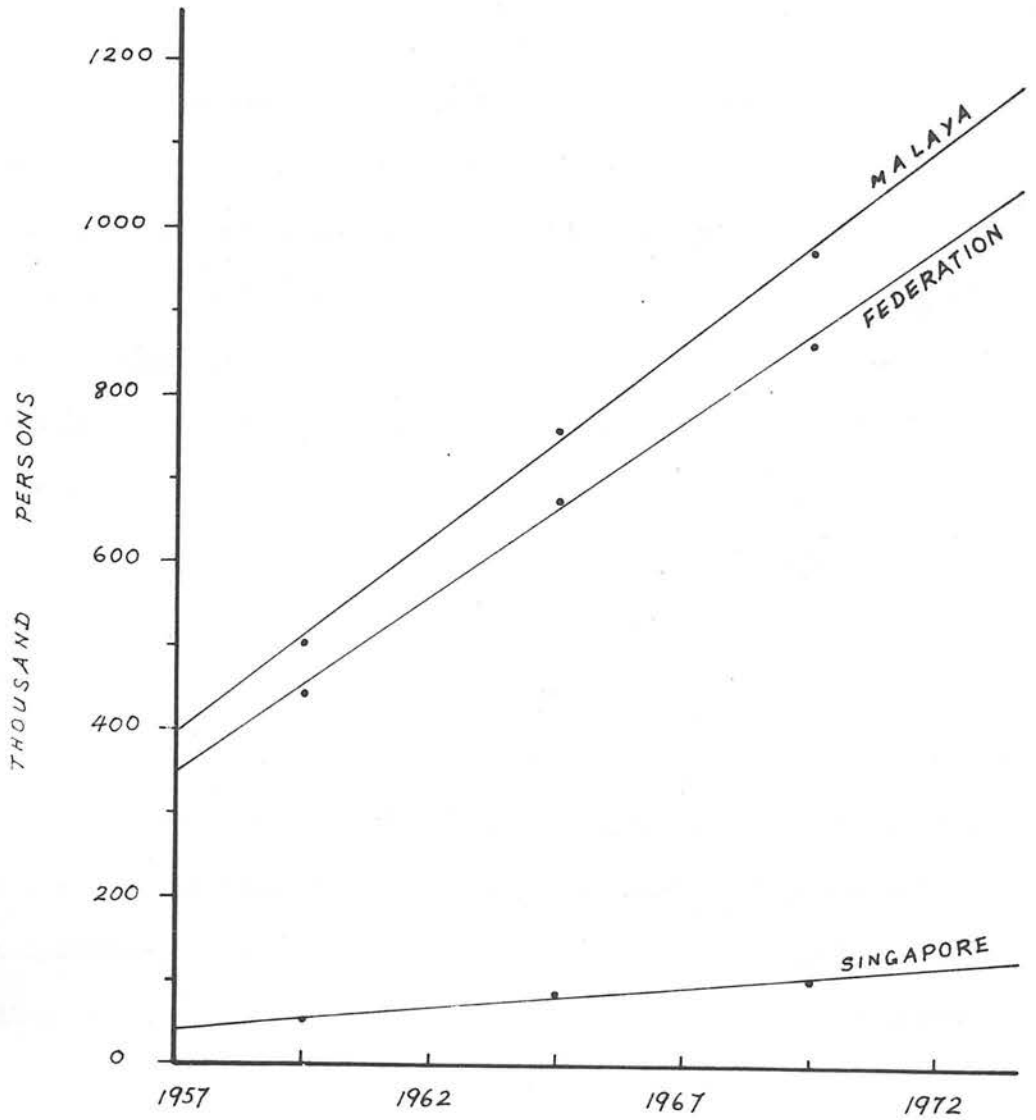
Similarities in ethnic group preferences are also noticeable in the tertiary sector. In both areas the Chinese are predominant in two industries, commerce, and finance and personal services, and display their traditional indifference to employment in the armed forces. The defence services comprise largely Malays. In the Federation there are relatively few Malays in personal service compared with Singapore, and a contributing cause must be the greater opportunities in the Federation for female employment in other fields. A further reason is the large number of Europeans in Singapore who are the main employers of Malay domestic labour".*

Prospects.

From the above analysis, it can be clearly seen that there are pressures arising from the increase in the population and labour force. The present population growth rate of over 3 per cent compares with one of around 2 per

* See R. Ma & You Poh Seng, 'The Economic characteristics of the population of the Federation of Malaya, 1957'.

FIG 32
PROJECTION OF LABOUR FORCE 1957–1972



BASED ON POPULATION CENSUSES, 1957.

cent or less ten to fifteen years ago in Malaya. And this increase is now being reflected in a parallel rise in the growth rate of the labour force, so that there are now approximately 50 per cent more new job-seekers each year than was the case several years ago. According to the 1957 censuses projections indicated that the available labour force, taken as those aged 15-64, is estimated to increase by 449,700 in the Federation and 51,500 in Singapore between 1957 and 1962, by 688,800 and 79,100 between 1962 and 1967, and by 866,900 and 105,400 between 1967 and 1972. (Fig. 32).

In both territories, there are signs of growing unemployment. A pilot survey carried out in May 1957 in the city of Georgetown, Penang for example, was reported in the 1957 Labour Report. It was confined to males between the ages of 16 and 55; and showed 4.4 per cent wholly unemployed, and 1.7 per cent employed casually. The significant findings, however, related to young people, for 20 per cent of the wholly unemployed were between 16 and 20, and a further 40 per cent between 20 and 30. Of all youths aged 16-20, about 12 per cent were unemployed, and 9 per cent had never worked at all. Nearly one-third of all the unemployed had never worked in their lives. In Singapore, according to the 1957 census, about 5 per cent of the economically active were unemployed, that is, persons who were not working but were actively looking for work. This figure is believed to be a gross understatement, since it does not include unpaid family workers, persons employed in work of a casual or temporary nature, and unemployed persons who for one reason or another are not actively looking for work. Thus there are considerable elements of both hidden unemployment and underemployment.

Also, an equally important problem arises from the sharp increase in the size of the younger age groups and the growing burden that this implies for

expanding education and other social services.

The education and training of young people for employment is based on two important assumptions: (i) that there exists a wide range of employment opportunities to ensure that the young people are fully and efficiently employed; and (ii) that there are sufficient educational facilities of a suitable kind to enable the young people to be trained for employment.

In relation to the Malayan economy such education should be designed for training young people for production in commerce, industry and agriculture.

In general, the secondary education can be divided into at least two major streams. One stream will continue to be provided with academic education aiming at preparing students for the professions and for training in the universities. The other stream should have facilities for general basic education combined with vocational training. This type of education should be less specialised in character. It should lay stress more on the acquisition of knowledge through activities and practical experience rather than through highly theoretical studies. Less attention should be paid to large-scale comprehensive examinations and more to periodical short tests comprising numerous questions on the work covered at each stage.

Although the existence of these facilities shows that substantial progress has been made during the last few years, the facilities are still hardly adequate in relation to the needs of the country. There are compelling reasons why the further expansion of technical and vocational training facilities should be given higher priority in the future education programme of the country. Firstly, from the economic point of view, the training of an adequate supply of skilled personnel and technicians is an essential condition for the success

of any plan of economic development. It has been emphasised that much of the economic value of education will be lost if proper place is not given to the types of education and training, in and out of school, that contribute directly to industrial efficiency.

Secondly, from the social point of view, the rapid development of vocational and technical education is urgently needed. This is because of the serious problem posed by the large and growing numbers of young people who come into the labour market every year. Unless the majority of these young people are trained in the necessary skill for efficient production in agriculture and industry, they are likely to find serious difficulties in getting employment. Without a radical change in the school system, all those who manage to get a place in the schools will be receiving a type of academic training which will inevitably draw them towards the already over-crowded pool of white collar workers.

For these reasons, some of the changes in secondary school education should be considered by the teaching profession. Consideration should also be given to the possibility of integrating academic and vocational training. Some experiments have already been made in this direction by the establishment of secondary "modern" schools, which aim at combining in their curriculum academic and vocational training. If this type of school could be extended there would be distinct progress in the direction of shifting the emphasis from academic to vocational and technical education.

In fact, the problem of providing education and employment for the young people is a special aspect of the wider problem of employment posed by the rapidly growing population.

The problem is one of serious magnitude, but there is no reason to panic. It is undesirable to indulge in extreme pessimism. Since 1930 the population of Malaya has doubled but this has not led to any serious unemployment. The economy of Malaya in the past appeared to have shown a great deal of resilience through the expansion of commerce and industry. One important factor was the favourable effect of world development and expansion of world demand. The growth of Malayan population was also accompanied by the favourable influence of a rising consumer demand. It is important that the people of Malaya and those who are in control of the Government think in terms of achieving a dynamic economy rather than of remaining in a static economy.

However, the problems of merely keeping unemployment from rising and keeping per capita standards of social services and incomes from falling will be substantial. There is also a need to achieve improved standards of living. From a social standpoint, this is particularly urgent in those areas of the economy which have been largely by-passed by the increase in prosperity of the past decade. All the areas of the future Malaya include widespread areas of poverty and economic backwardness. These are most pronounced in the north and east sections of Malaya. Expanded efforts in education, resettlement, and other aspects of rural development will be needed to cope with these needs. In addition, there are in some of the main urban areas, especially Singapore, serious slum conditions and growing unemployment which need to be met through continued low-cost housing programs, urban renewal and special efforts to create new jobs.

Of the territories of Malaya, the Federation shows a comparatively high rate of urbanisation but, unlike Singapore in many respects, its industrial

occupations are essentially primary. In 1947, primary industry accounted for more than 50 per cent of the economically active population and the proportion showed no major change ten years later. Manufacturing still remained limited by 1957,(22) so that with the Emergency and other forces accelerating the push of the rural people into towns, the problem of unemployment and underemployment is sufficiently serious to merit continuous government attention."

In Singapore, it exhibits "a high level of urbanisation as well as industrialisation. With urban population increases, the labour force engaged in industries and non-agricultural activities has shown a rapid rise since 1947. Nevertheless, it should be noted that Singapore City has not been able to absorb all the population within its boundary, with the result that the government has had to create a new industrial estate at Jurong, a few miles outside the city. Plans are also in hand to develop similar estates at Sembawang and Woodlands and possibly in two other areas." (Fig. 40).

Thus, it appears that in Malaya as a whole, as in many other developing countries, "there does not exist any close correlation between urbanization and industrialisation. While it is true that the rate of urbanisation is comparatively high (Table 4.6), there is only a small movement of people away from agricultural activities into industrial employment. Nowhere in this region does the high proportion of population living in towns reflect levels of industrial development."

---

(22) See Fell, H., "1957 Population Census of the Federation of Malaya, Report No. 14". (Kuala Lumpur, 1960). p. 7.

Kuala Lumpur is an example. It is the political and administrative capital of Malaya and stands in the centre of the world's richest tin-mining and rubber growing area. It is a commercial centre of some importance, functioning largely as a distribution centre of manufactured goods imported from overseas and as a collecting point of agricultural and mineral products for export to foreign countries.

"The city's rapid growth is reflected in its population, which rose from 46,718 in 1911 to 316,230 in 1957. Before 1947 the rate of population growth varied according to the fortunes of the rubber and tin industries because these determined the inflow and outflow of alien immigrants. The city's development during the last decade, however, was largely determined by its status as a leading city; and because it was a large enough area to receive surplus population from the countryside. Consequently, its population composition changed and one of the most striking post-war features (also common to many towns in Malaya) is the increase of Malay population. (Table 4.21).

Table 4.21. Index of population growth by races in Kuala Lumpur

	1931	1947	1957
Malay	100	204.2	237.9
Chinese	100	164.1	123.6
Indians	100	117.7	81.4
Others	100	114.4	116.7

Source: Censuses of Population, 1947 and 1957.

This rise of the Malay proportion of the population may be explained by a variety of social and economic factors. As government functions (concen-

trated in Kuala Lumpur) expanded, administrative offices have multiplied to take in an increasing number of government employees of whom a fair proportion are Malays. The concentration of the nation's defence organisation in Kuala Lumpur has also been a significant force drawing an increased number of Malay military personnel and policemen into the city. Other Malays have migrated into the city because of poverty and the lack of modern amenities in the surrounding areas. In addition, the city itself acts as a magnet. Being replaned on modern lines with greatly improved standards it naturally attracts population from the poorer areas.

Because of its special position Kuala Lumpur provides administrative and professional services including a wide range of governmental and private activities. It has an economy heavily weighted in the service sector, and an analysis of the employment structure of the city showed that out of a total population of 176,000 in 1947, 35 per cent were gainfully employed.(23) Of this, three-quarters were employed in tertiary activities, only 15 per cent are engaged in manufacturing industries, and the rest in mining and agriculture. Of those engaged in the tertiary services, 40 per cent were in public administration, 15 per cent in transport and another 15 per cent in commerce and finance. However, the physical concentration alone of banking corporations, clearing houses, the stock exchange, business agencies and big departmental stores testifies to the growing importance of the city."*

On the other hand, a new pattern of development is apparent in the Federation, for, in addition to the rapid growth of population in Kuala Lumpur,

---

(23) Data on the occupational structure of the city in 1957 and subsequent years are not available.

* See H. Sendut, 'The Structure of Kuala Lumpur', (1965).

the small towns between 5,000 and 10,000 population show a greater concentration of people;[24] they grow faster than the medium size towns while still lacking the suitable technical, social and economic environment for the location of both small scale and large scale industrial enterprises. In this respect, the growth pattern of urbanisation in Malaya as a whole differs from that of the United Kingdom, France or the United States, where growth tendencies indicate a close interaction of industrial development and urbanisation. Instead, in all the areas there appears to be a general lack of industries and there is considerable underemployment, at least in the major towns.

Economically speaking, the rapid rise of urbanisation in Malaya merely reflects a shift of people from low-income work in agriculture into another sector of employment, namely urban employment such as petty trading, taxi-driving, trishaw-pedalling, hawking of foodstuffs and domestic service etc., which are also of low productivity. The question may then be posed as to whether the region as a whole is already at a critical stage or urban development before being over-urbanised through further rural-urban migration.[25]

"The impact of urbanisation on labour mobility, income, levels of living, saving and capital formation in Malaya is difficult to assess because of the lack of data, but certain generalisations which apply to South-east Asia as a whole may also hold for much of Malaya, although actual situations may vary

---

(24) See Hamazah-Sendut, "Patterns of Urbanisation in Malaya", Journal of Tropical Geography XVI (Oct. 1962), pp. 114-30.

(25) For a study of this phenomenon in Malaya, see Hamzah-Sendut, "Problems of rural-urban migration", Community Development Bulletin, XII, No. 3 (June 1961). pp. 86-90.

with different racial groups.

First, the movements of people from the countryside clearly indicate some kind of labour mobility; the greater proportion of people at present working in the police force, government administration, public transport, and to a certain extent in manufacturing and processing industries, was recruited from agriculture.

Secondly, while it is generally true that the urban working force receives a relatively higher level of income than the rural people, it must be noted that the same working force has a large number of dependants to support. In other words, the "dependency burden" of townward migrants who leave their dependants in the rural areas is high, for not only have they to support themselves in a new environment but also their wives and children who are not with them."*

In the rural areas of Malaya, as in most of the developing countries, the problem is not one of the population being too great for the available land. There is still empty land to occupy, though this will fill up fairly rapidly. The problem is one of how rapidly it can be occupied.

If the agricultural population increased as rapidly as the population as a whole, the land available per person would decline, unless the area of agricultural land cultivated increased as rapidly as the population. Of course, if farming became more productive, because of improved techniques, a smaller increase in area might do to maintain output per head, but if this happened, surplus labour in rural areas would probably ensure that most of this gain went to landowners. This in turn would create a demand for new land.

---

* See H. Sendut, 'Urbanisation'. in Wang GungWu, 'Malaysia'.

In Malaya, there are clearly phenomena of land shortage, in the form of rising land values, and higher shares going to land in share cropping systems, in spite of large areas of land still unoccupied; this is because of failure to open up new land at a sufficient rate.

Nevertheless, "rapid and sustained growth can occur, spreading from one industry to another, if certain preparations have first been made."(26) These include a basic structure of communications, transport, power, technical education, and an effective government machine.(27) In such a situation a moderate rate of population growth could, especially if empty land were still available, stimulate rapid and sustained capital development.

[redacted]

---

(26) See W. W. Rostow, "The Take-Off into Self-Sustained Growth", Economic Journal (March, 1956).

(27) See Bicanic, R. "The Threshold of Economic Growth", in "Kyklos" Vol. XV, 1962. pp. 7-28.

[redacted]

Furthermore, in a country like Malaya, with a stable political and economic environment, the prospects for a fair measure of success of the industrialisation and rural development schemes will be enhanced. Increasing industrialisation will be accompanied by increases in per capita income and opportunities for gainful employment, while its corollary, the development of urban communities, will bring about far-reaching changes in the economic and social structure of the population.

Chapter V.

Some Aspects of Rural Development.

As Chapter IV has shown both Chinese and Indians are mainly concentrated in urban centres and the Malays in the rural areas. In Malaya as a whole, the Malays represent less than 20 per cent of the total urban population, while they constitute over two-fifths of the total population.

The preference of the Chinese and Indians to sell their labour for an economic wage accounts for their concentration in the rubber-growing and tin-mining states; while the Malay population in the rice-growing states is a very large majority and confirms the Malay preference for subsistence farming. In the primary sector of the economy, Malays comprise nearly 60 per cent of the total workers, the rest being mainly Chinese and Indians.

According to Puthucheary's estimate,(1) subsistence activities cover 2.75 million acres and occupy 44 per cent of the population. Of the acreage under subsistence farming, Malays own about 1.85 million acres or about 63 per cent, while Chinese and Indians own about 0.8 and 0.1 million acres respectively.

Malay and Chinese farmers are found in varying proportion in the different agricultural activities. As we have pointed out in the previous chapter, about 97 per cent of the persons engaged in rice growing, 68 per cent in fishing and 66 per cent in coconut and copra production are Malays; while 68 per cent of the persons engaged in mixed agriculture especially market-gardening are Chinese, although both are equally important in the rubber smallholdings. Indians are almost entirely engaged in rubber plantations.

---

(1) See J. J. Puthucheary, "Ownership and control in the Malayan Economy", p. 5, Table II.

Rubber is the most important of the smallholder cash crops; it covers more than a million acres. Of these, Malays own about 0.65 million acres, Chinese and Indians own about 0.4 and 0.1 million acres respectively.

Rice, the traditional crop, is planted on about 0.85 million acres, of which, Malays own more than 0.8 million acres, while Chinese own less than 0.05 million acres. A survey of land under padi in Kedah and Perlis, which accounted for about a third of the land under padi in Malaya, showed that only about one per cent of the land was owned by Chinese.

Coconut is mainly a smallholder crop and grown round houses and villages. The estimated area under coconut is about 0.5 million acres, of which about 75 per cent is in smallholdings. Of these, about three-quarters belongs to Malays.

Market gardening occupies about 0.35 million acres. Most market gardeners are Chinese.

Rural Backwardness.

On the whole, the comparatively backward section of the rural population is predominantly Malay. For a generation or two the Malay peasant was or seemed to be content with his lot which was undeniably much better than it had been. His apathy was due in part to ill-health and malnutrition which in turn were the result of ignorance and traditional prejudice over such matters as diet and the upbringing of children.(2) Ignorant conservatism reflected lack of educational facilities. Where those facilities existed it was difficult for a hard-pressed peasantry to keep even the most intelligent of their children

---

(2) See Report No. 13 of the Institute of Medical Research, 1950.

at school for long enough. Thus each generation made only slow progress ahead of its parents. To break out of a vicious circle of this kind calls for an exceptional effort.

The awakening began in the period between the two World Wars in the form of a Malay sense of exploitation and deprivation directed against the Chinese middleman and to a lesser extent against a remote government which stood in the place of the old Rajas but had failed to help him effectively.

In bargaining with the shopkeeper-dealer the peasant producer is at a disadvantage. His rubber, copra, padi or fish is of uneven quality and he cannot know what it is worth at today's price in a distant regional market. He can hawk it round the several buyers in his village but he suspects that they will not bid against each other. He may also be cheated over quantity by an excessive deduction for moisture. Bad communications make it difficult for him to go direct to the regional market in which the dealers re-sell. Moreover they own all the lorries which ply for hire. Above all there is the problem of debt. The padi cultivator is likely to need seasonal credit to tide him over until the harvest; the fisherman too must live until the season of storms is over. In any case the smallholder or fisherman rarely accumulates cash reserves against the abnormal expeditures which his own needs or social customs oblige him to incur from time to time. So he borrows improvidently and pledges his future produce to the shopkeeper-buyer as security. Later on when he is delivering his produce to his creditor in settlement of debts he cannot bargain over prices.

One should not damn the middleman, usually a Chinese village dealer, as a mere exploiter. He has to carry on business on a small scale since the

credit risks require his personal supervision and the capital to expand his operations is expensive to borrow. There are too many small shopkeepers making a moderate living by taking excessive margins on too small an individual turnover. The system itself is inefficient. Within its limits the Chinese trader operates more skilfully than his Malay customers. Yet for most of them he is the only resort in time of need and - at a price - he will usually help. Their attitude to him is ambivalent, a mixture of dependence and resentment.

Improved marketing and credit systems may indeed secure to the peasant producer a larger share of the value of his output. Yet this contentious question too often distracts attention from the greater benefits to be obtained by assisting him to increase his output through relieving land-hunger, raising crop-yields, and introducing better methods of processing and grading his produce. All these improvements require an infrastructure of better standards of education and health in the village community.

Rubber Smallholdings

Among the various types of economic activities in the rural areas, rubber and padi are the two most important industries according to the labour force engaged in the industries; although the coconut planting and market gardening are also important for the rural population. The poverty problems are more acute among the padi farmers than the rubber smallholders. Prof. Aziz has pointed out that "many padi farmers live on incomes that are equal to one half or even less than the incomes of rubber farmers".*

---

* See Lim Tay Boh, "Problems of Malayan Economy", p. 22. It should be noted that the measure which Prof. Aziz had made was probably during the Korean war period. But at the present rubber price level (about 70 Malayan cents per pound), the incomes of rubber farmers are believed still higher than the padi farmers.

"A rubber smallholding can vary from less than 1 acre to 99 acres in size, as we have pointed out in Chapter three. But over eighty per cent of the total smallholding acreage consisted of holdings of less than 25 acres of rubber; of these most were less than 4 acres in size. This category of rubber smallholding has been appropriately termed "peasant holding" (see Chapter III). In contrast are the much larger holdings of between 25 acres and 100 acres in size. These holdings have been rightly called "medium holdings" in official publications."(3)

More than one-half of the rubber acreage on peasant holdings was Malay-owned, about one-third was Chinese-owned and the remainder was owned by Indians and others. It is clear that peasant holdings were typically Malay-owned, and averaged little over 3 acres in size of rubber holdings. Holdings in the same category owned by other ethnic groups tended on average to be larger in size and fewer in number.

On the other hand, almost two-thirds of the rubber acreage located on medium holdings was Chinese-owned, and the remainder mainly owned by Indians while a smaller proportion of the planted acreage located on medium holdings also owned by Malays and others.

In Malaya, "the rubber smallholding ownership on an ethnic basis, which roughly fifty per cent are Malay-owned, thirty to forty per cent Chinese-owned, and the remainder are owned by Indians and others."(4)

---

(3) See Federation of Malaya, "Rubber Statistics Handbook", 1963. (Kuala Lumpur).

(4) See Ooi Jin-bee, "The Rubber Industry of the Federation of Malaya". Journal of Tropical Geography, XV, (June 1961). p. 58.

The yields obtained by smallholders were relatively low as compared with the rubber estates. (See Chapter III). Several reasons for the low yields achieved by smallholders can be stated as follows: (i) the trees are from unselected stock, un-budded and include a substantial number of self-seeded trees. Even in their prime, such trees would yield much less than the potential yield of selected budded rubber; (ii) the trees are old and approaching the end of their useful life. For it is generally accepted that the rubber tree has a productive life of from 30 to 35 years. But a considerable proportion of the total smallholding acreage was planted with trees which were over 30 years old. Moreover, where there are younger trees, they are mostly self-seeded and of poor quality; (iii) the general standard of maintenance and tapping has been very poor. Most of the Malay peasant holdings of rubber acreages are overgrown with lalang, kedudok and other weeds, and many of the trees have been slaughter tapped. The average stand of trees per acre are much fewer than in the estates. Many of the trees still in production have so little bark left that ladders have to be used to reach the tapping panels.

The actual gross income from the sale of the rubber produced depends not only upon the quantity produced, but upon the grading of the rubber and its method of sale. The reasons given for the failure to make full use of these facilities were many and various, but the most cogent appeared to be that the producers especially Malays, who could not afford to wait the ten to fourteen days while the rubber was being smoked before selling. The fact remains that the majority of producers resident in the villages were selling their rubber as unsmoked sheet.(5)

---

(5) Roughly speaking, the prices of unsmoked rubber are normally 20 per cent lower as compared with No. 2, ribbed smoked sheet.

In any case, the future of rubber smallholdings is closely tied to the question of replanting. The level of rubber production in it is at a low ebb on account of the age, poor quality and bad condition of the trees. Further, it is clear that most of the trees are near the end of their useful life. In the holdings now in production, the volume of output will continue to decline, and little can be done for the improvement of existing trees and land condition that would significantly raise productivity. Minor improvements might be achieved, and the tapping life of the trees slightly extended by more careful methods of tapping and by clearing the undergrowth but any such improvement would be small and temporary. The age and poor quality of the trees and the waste of bark reserves over years are irreversible factors, and replanting constitutes the only effective remedy.

The immediate causes of low productivity can only be removed by replanting with high yielding rubber varieties. But replanting is fraught with an almost insuperable difficulty for the smallholder who owns little land, for in the replanting process old trees have to be eradicated before new trees can be planted, and, further, the new trees take seven years to mature. It therefore involves foregoing the income from the land for seven to eight years. Where the smallholder's only asset and source of income is his land, there is a natural tendency for him to postpone replanting, and accept the consequences, so long as he can derive some income, however small, from the old trees. Nevertheless, under the Rubber Replanting Schemes, certain progress had been made in the rubber smallholdings since 1953, when the schemes were implemented. (See Chapter III).

"By the end of 1961, the various ethnic groups had achieved very different degrees of progress in the matter of replanting. During the period 1953-61,

over forty per cent of the total Chinese-owned smallholding acreage requiring action was replanted, whereas Malays had replanted little more than one-fifth of their total acreage, and "others" including Indians, had replanted less than one twelfth.(6) Thus, most progress with regard to replanting was achieved by Chinese smallholders who replanted approximately 62 per cent of the total smallholding acreage affected. Thirty-five per cent of the acreage replanted was a result of the efforts of Malay smallholders, and the remaining 3 per cent the work of "others".

There can be little doubt that this variation in performance is, at least in part, a reflection of the difference in size between the "typical" Malay and Chinese holding. It is broadly true to say that Malays own the smallest rubber smallholdings, whereas Chinese smallholders usually own at least twice as much rubber. It is obviously much easier to replant on a reasonably large holding, without seriously reducing income, than it is on a very small peasant holding."*

Furthermore, the general conservatism of peasant farmers, and the suspicion with which they view any government action; many were "hesitant about applying for assistance until they were fully satisfied that it did not involve governmental control of their holdings".(7)

In addition, joint ownership also is a frequent obstacle, both on account of the inability of the various owners to agree and the smallness of the interest and income of the individual joint owners. Therefore both the problems of replanting and of divided ownership are tending to produce a

---

(6) It is estimated that less than 1.5 per cent of the total smallholding acreage existing in 1952 had been replanted.

(7) See Ooi Jin-Bee, op.cit. p. 63.

* See J. C. Jackson, 'Smallholding Cash Crops' in Wang GungWu, 'Malaysia'.

transition in the economy from ownership of the area by small independent peasants resident in the area to a system of landlord and tenant. This transition is already well advanced and operated in most of the Malay-owned areas on a tenancy or sharecropping basis, and with a substantial proportion of the peasant families owning no interest in land whatever. Under such circumstances, the rate of replanting appears likely to depend to a considerable extent upon the rate of aggregation of the individual holdings.

Nevertheless, of the total acreage of smallholding rubber replanted between 1953 and 1961 slightly over 79 per cent lay on holdings of less than 15 acres in size. Of these, the majority of the owners who had commenced replanting operations owned more than one lot, and could depend upon the income from other land until the new trees mature. The replanting owners were, in fact, relatively well off; they were actively engaged in the process of land aggregation, and to them the replanted land was an investment and not a means of livelihood. Despite the many difficulties replanting has, however, had a noticeable effect upon the peasant type of smallholdings.

Rice Cultivation

In general, rice farmers are poorer than rubber smallholders in Malaya. Although many of the peasants are immigrants, their methods are largely traditional, and in all but exceptional years they earn less than they could in more specialised activities. The average yield of rice per acre is under 1,500 lbs. (Table 5.1), which, though better than that of India and of the major rice-exporting countries, is much less than is attained in Japan and Taiwan. (See Appendix VIII). Product per man is harder to calculate, for most rice-growers do other work as well, the crop being highly seasonal. Suffice it

Table 5.1. Production of rice per acre in the Federation.

(lbs.)

Season	Wet Padi	Dry Padi
1926-27	696	481
1936-37	1,000	461
1946-47	947	370
1956-57	1,263	656
1962-63	1,464	734

Source: Rice Supplement to Monthly Statistical Bulletin of the Federation of Malaya, 1963. Table 2A.

to say that each individual plant is normally transplanted by hand, and each separate ear cut by a method in which even the degree of mass production represented by the sickle is not found.

Assuredly the Malayan smallholder did not (at least until the war) grow rice for cash. Part of the crop might be sold under contract to meet a debt, and later bought back for consumption, with profit to the distributor, and a further load of debt. But rice was a way of life. The cash came from the rubber, or coconut, or fish, or from casual earnings as an occasional hired worker. Government attempts to make Malaya more self-supporting in rice were largely attempts to resist a current flowing toward higher standards, and maintain by slight changes a traditional agriculture that could spell nothing but poverty. Methods of producing higher yields, however, left the most traditional peasants untouched. Less traditional peasants often acted in accordance with their own economic interests and restricted the acreage cultivated, spending more time in more lucrative occupations or in leisure. Many of the improved strains of rice, developed before the war, were lost

during the Japanese Occupation, and new strains introduced by the Japanese have now also been generally abandoned.

The condition of rice growers in Malaya has not in general been much better than that of the millions of rice-growing peasants throughout tropical Asia - a life of great poverty, of alternating periods of unhealthy and arduous work and then of idleness. But Malaya is not, like India, China and Java, a poor and over-populated country. Its national income, though very unequally distributed, has almost certainly been for many years at least three times as great per head as that of these crowded countries.

It could produce more of its own rice only by preserving its peasant population, and resisting the flow toward the more lucrative sectors of the economy. This was done before the war partly by measures to increase the area under rice cultivation and partly by attempts to discourage the drift to rubber and to the towns.

In any case, the problems of improvements in yield of padi cultivation may be achieved by better drainage and irrigation, improving padi varieties, more effective control of pests and disease, and increased emphasis on mechanisation. Before we go to discuss these problems, it is useful to examine the physical environment affecting the rice cultivation in Malaya.

1. Climatic conditions. It has been discovered that though rice cultivation extends from latitudes 45°N to 40°S, there certainly is a relationship between latitude and yield since highest yields all seem to be recorded outside a zone between 30°N and 30°S.[8] It is doubtful if latitude

---

(8) For example, in the season of 1963-64, the highest record of average yield per hectare was Spain with a figure of 62.3 Kg./hec. The following countries were Japan in Asia, Italy in Europe, and U.S.A. with more than 45 Kg./hec.

alone is responsible for this as in these countries intensive cultivation is maintained. Nevertheless it is possible that latitude may have an effect on yield through resultant differences in temperature and the length of day.

The average temperature the padi plant needs throughout its life ranges from 68°F. to 100°F., but in areas where the mean temperature is below 75°F. it seldom really thrives. It has been calculated that the total temperatures necessary to mature a crop (the sum of the daily mean temperatures throughout the growing period) is between 3,000°F. and 4,000°F. in the warm temperate regions, whereas in tropical regions it is often twice or three times those figures. Today much research is being carried out on this question of temperature and its influence on growth as well as on differences in the length of day and their effect on yield. Varieties commonly grown in Malaya seem to be very sensitive to day length.

"Between latitudes 20°N. and 20°S. rice is grown throughout the year as long as an adequate supply of water is available and hence we find that the rice season usually coincides with the rainy season. At other seasons it is necessary to ensure an adequate water supply from reservoirs or rivers. The length of the growing period of varieties cultivated during the monsoon season seems to depend on the length of the rainy season and the amount of rain. Through research it has been discovered that the rice plant prefers cloudless sunny weather with high temperatures and an adequate supply of water, conditions often found in warm temperate regions. Cloudy monsoon weather does not seem conducive to photosynthetic activity and high yields."

Thus with regard to climatic factors affecting rice production it would seem that greater yields are obtained in warm temperate regions, areas which

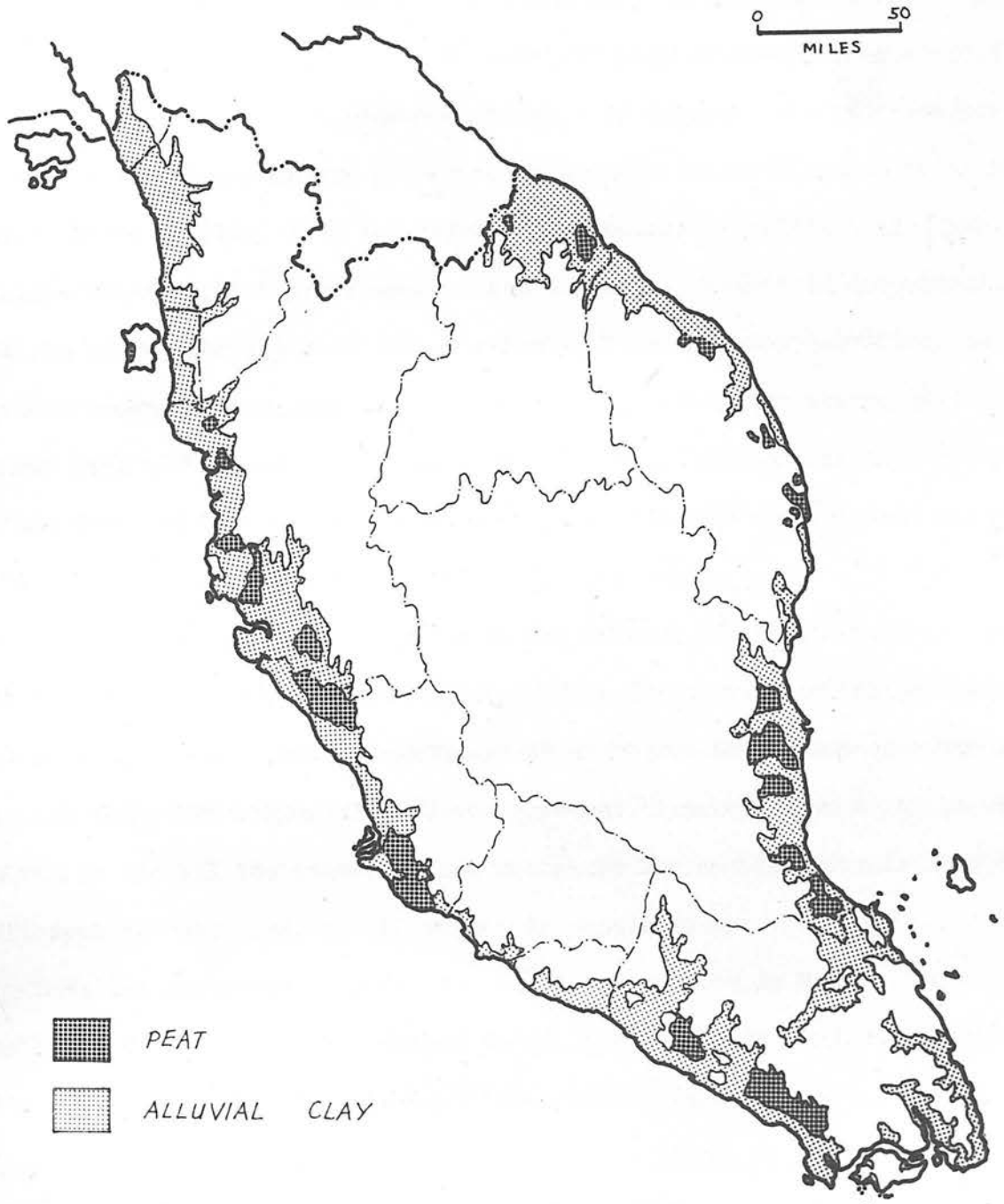
are characterized by lower temperatures, longer days and cloudless skies. It seems as if conditions favourable to slower vegetative development and the retardation of the flowering plant increase the yield.

"Water supply is closely related to yield in rice areas. Rainfall in rice growing countries varies from 30" to 200", but while there is no relation between the total quantity of rain received and actual yield, countries with higher yields are characterized not only by a moderate rainfall of 20" to 30" but also by adequate irrigation facilities so that the water supply can be both timely and adequate. Yields too, are always higher in irrigated areas than in purely rain-fed areas."

Not only is the quantity of water an important factor but yield also depends in no small measure on the quality. Water may have a considerable fertilizing value due to mineral nutrients or on the other hand may damage crops through pollution. Hence river water is usually preferred to that from other sources as it contains fertilizing elements dissolved in it, and silt which when spread over the land has a favourable effect on the soil. The control of the water supply is of paramount importance, and yield can be seriously affected if the supply is insufficient especially at the time of earing.

Though rice can be cultivated at altitudes up to 5,000 feet above sea level, very little rice is grown as the yield is not as heavy as with wet padi. Essentially, the padi plant is a product of low-lying land, confined mainly to river valleys, river deltas and coastal plains where the water supply can be kept both regular and assured. (Fig. 22).

FIG 33
SOILS SUITABLE FOR PADI CULTIVATION



BASED ON THE SOIL MAP OF MALAYA. 1962 ;
ALSO REFER TO FISHER.

2. Soil conditions. These are another important factor in rice cultivation. Though it is grown in all types of soils, from sandy loams and shallow lateritic soils to heavy clays, the only controlling factor being the water supply, it has been found that the heavy soils of river valleys and deltas are by far the best suited to rice. It appears that it grows best in heavy soils with silt and clay fractions amounting to 50 per cent or 60 per cent. Better yields, too, are obtained in neutral or acidic soils than in alkaline soils. Rice grows under swamp conditions but it is not aquatic and requires oxygen for its root system hence a heavy soil not completely impervious is the optimum. Good padi soils therefore, are generally heavy, acid in nature, with a PH value varying from about 4 to 6, and containing between 0.1 per cent and 0.6 per cent of nitrogen and 0.04 per cent to 0.17 per cent of phosphoric acid.(9)

Malaya certainly does not possess the optimum conditions for rice cultivation. Soil deficiencies, the climatic rhythm, heavy cloud cover, and various difficulties arising from brackish water, [illegible] all operate together to make Malaya a region where man has to use all the ingenuity and energy he can command to raise crops sufficient for the needs of the expanding population.

Detailed geological surveys are still in progress in Malaya but work has gone on apace in regions considered to be potential padi land. Coastal areas especially are of interest. (Fig. 33). "Dark blue clays containing

---

(9) See Coulter, J.K., "Soil Survey of Jungle Swamps for Padi Cultivation". International Rice Commission News Letter. No. 15 September, 1955. Dannett, J.H., "The Classification and Properties of Malayan Soils". The Malayan Agricultural Journal Vol. 21 No. 8. 1933 and also Grist, D.H., "Rice". (London) 1953.

lenticulate sands and peats stretch inland up to forty miles as flat swampy ground, reaching at the coast a thickness up to as much as four hundred feet. The extensive alluvial plains of the great river basins of Burma, Indo-China, and Thailand provide ideal conditions for rice cultivation whereas in Malaya cultivation is greatly restricted by the paucity of large river basins. Any easily drained areas with clay surface soils have been cultivated by Malays, and today, only forested areas where clay soils underlie layers of peat as much as twenty feet, remain uncultivated. Thus new techniques must be mastered before any of this land can be brought under cultivation. So far only in land where peat is not more than five feet below the surface has the work of drainage and irrigation been carried out. The control of water once these areas have been drained provides further problems and a great deal of expenditure."*

On the whole, Malayan soils are of open texture and are free-draining and this together with the heavy rainfall tends to increase leaching. Soils such as these, it has been said, would be rejected as useless in Western Europe. Intensive leaching keeps the amount of plant food at a minimum and it is only because of the intense weathering of the small amounts of plant foods which are in combination as complex minerals that local soils have some semblance of fertility.

Despite the drawbacks, however, improvements of rice cultivation have been achieved in certain aspects in the past. Government participation in a great variety of investigations and remedial measures in the field of rural development was the most important factor in these achievements. Major remedial programs were established during the depression of the 1930's and after the

---

* See E. M. Cooke, 'Rice Cultivation in Malaya', pp. 15-19.

Second World War when the disruption of trade with the countries which provide Malaya's food supply resulted in near starvation in certain parts of the peninsula. The Rice Investigation Committee formed in 1930 and the Rice Production Committee of 1952 evidence the sustained interest in food production problems. In addition, agricultural development measures included in the Draft Development Plan of 1950 and in the Report of the International Bank Mission on the Economic Development of Malaya of 1955 have been implemented by departments concerned. The Federation Departments of Agriculture, Drainage and Irrigation, and the government sponsored Rural and Industrial Development Authority, as well as individual State Governments and District Administrative Officers, also have played an important part in initiating local agricultural development.

Certain human factors of significance for the future development of rice cultivation in Malaya must be considered.

(i) Drainage and Irrigation. "Successful cultivation of padi depends on adequate inundation of the field during the greater part of the growing period of the plant, and efficient drainage of excess water whenever desirable. Supply and control of water is the most important aspect of padi cultivation; with an adequate and well-controlled water supply the crop will grow successfully in a wide range of soils and climates. The quantity of water required depends on such factors as field evaporation, seepage, preparation of the land and initial flooding; while the conditions having an important effect on these factors are climate, characteristics of the soil, length of the irrigation period, ground water-table, method of planting, yield and method of irrigation. Yield, in fact, depends in no small measure on the quality of irrigation water."

The Malay padi planters in historical times used various ingenious means of regulating the water supply. "The most common system employed for fields which bordered streams was to raise the water level of the stream by means of dams constructed of brushwood, tree trunks, bamboos and boulders."* Such dams were small and weak, and often gave way at a critical period and ruined the crops.(10) Where the river was large and the banks too high to allow for dams, waterwheels were used to lift the irrigation water to the fields on one or both banks. The water was conducted by troughs to the fields, but the waterwheels could rise or fall with the river levels, and were easily destroyed in floods.(11) In the largest rivers with well-developed levees such as the Perak and Pahang Rivers, irrigation by gravitation presented considerable difficulties as the river levels in many parts were lower than the levels of the fields and the levees were too high to permit the efficient working of the waterwheels. The farmers had to rely entirely on local rainfall for their water supply in swampy locations, and the areas they were able to plant each year varied with the amount and incidence of rain that season.(12)

The successful cultivation of padi under such conditions was difficult. The development of modern methods of water control based on concrete reservoirs, dams, weirs, cannals, pumps, etc. began in Malaya soon after the establishment

---

(10) See Grist, D.H., "Wet Padi Planting in Negri Sembilan", Department of Agriculture. Federated Malay States, Bulletin 33. (Kuala Lumpur 1922). pp. 9-10.

(11) Ibid. p. 11.

(12) See "Padi Planting Methods in Malaya", Malayan Agricultural Journal, Vol. XXVII, No. 2, 1939. p. 41.

* See Ooi Jin-Bee, 'Rural Development in Tropical Areas, With Sepetial Reference to Malaya'. (1959).

of British rule, when the Krian Irrigation Scheme was instituted.[13] This Scheme was completed in 1906, and it brought adequate water control to some 56,000 acres of land on the north-west coast of Perak.* But Governmental interest in padi flagged as rubber came into the agricultural scene, and for the next twenty-five years no attempts were made to extend modern drainage and irrigation facilities to other parts of Malaya.

The great depression revived Governmental interest in increasing the home production of rice. A Rice Investigation Committee was set up. Its report stated that the basic need of padi farmers in all the States was for better water control facilities, pointing out that, apart from the Krian Scheme no such facilities existed anywhere else in Malaya.[14] The Committee recommended that the work of water control should be pan-Malayan and accordingly recommended the formation of a new department to be called the Drainage and Irrigation Department (D.I.D.).

Up to the Second World War, the D.I.D. provided modern methods of drainage and irrigation to some 120,000 acres of existing padi land, and opened up an additional 53,000 acres of new padi land. Although about 23 per cent of the total padi acreage of 743,000 in 1940 was provided with some form of water control.[15]

---

(13) See A.S. Haynes, "Extension of Rice Cultivation in the Federated Malay States: Need for a Definite Policy", Proceedings of the Federal Council of the F.M.S., 1933 (Kuala Lumpur, 1934), pp.C.288-90.

(14) See Federated Malay States, "Report of the Rice Cultivation Committee", Vol. II (Kuala Lumpur 1931). pp. 1-14.

(15) See "Annual Reports of the D.I.D. of the F.M.S. and Straits Settlements for the years 1932 to 1938", passim; Federated Malay States, "Report on the Progress of Schemes for the Improvement and Extension of Rice Cultivation" (Kuala Lumpur, 1935). passim; Annual Report of the D.I.D. of the Malayan Union, 1946 (Kuala Lumpur, 1948), pp. 1-21 and H.L. Barnett, "Rice in Malaya, Season 1947-48" Malayan Agricultural Journal Vol. XXXII, No. 1, 1949, p. 11.

* See L.A. Mills, "British rule in Eastern Asia" p. 250.

Considerable damage was done to irrigation and especially to drainage works during the Japanese occupation. The D.I.D. had to repair this damage and at the same time increase the tempo of its activities because of the serious shortage of rice in the post-war period.(16) Between 1949 and 1954 the area of padi increased to 846,000 acres of which 37 per cent had water control facilities.(17) The programme of the D.I.D. for the period 1955-1959 planned for the construction of thirty-four irrigation projects to affect an estimated 206,000 acres of existing padi land and bring into cultivation an additional 70,000 acres of new land. Owing to the shortage of experienced engineers, among other factors, the target was not realized.

"The need for modern drainage and irrigation facilities remains as great as ever, although the situation has improved substantially since the pre-1930's. Damage to crops because of floods or drought is common in those areas without a controlled water supply. It is estimated that an increase of at least 25 per cent in yields can be achieved in Malaya by just guaranteeing the water requirements of the padi plants."*

(ii) Pests and Disease. Padi is subject to insect pests at every stage of its growth, and the losses from this cause are enormous and largely preventable. Further losses of the crop are caused by faulty storage conditions. It is probable that the new and very potent insecticides now on the market may prove of value against certain pests in the field which hitherto

---

(16) See Annual Report of the D.I.D. of the Malayan Union, 1946, pp. 22-30.

(17) See Federation of Malaya, Annual Report of the D.I.D. 1948, (Kuala Lumpur, 1949) p. 6.

* See Ooi Jin-Bee, 'Land, People and Economy of Malaya', pp. 239-242.

have been difficult to control, but good cultural systems and control of irrigation will remain among the most efficient methods of control over many of the pests. It is possible that complete control over field and store pests would increase the crop from five to ten per cent.(18)

In Malaya a preliminary survey of a hundred nurseries in the main padi areas of Kedah, Perak, Province Wellesley, Negri Sembilan, and Malacca showed that 25 per cent of them were severely affected by leaf-spotting organisms (mainly Helmintbosporium oryzae, Nigrospora spp., Piricularia oryzae and Curvularia spp.); 55 per cent were lightly infected with various leaf spots; 2 per cent heavily infected by a disease of the stem and leaf-sheath and only 18 per cent were free from any serious disease.(19)

Birds, monkeys, elephants and other pests are responsible for substantial crop losses each year. Control measures must be exercised continuously to be effective, especially when the plant has tillered and the grain is ripening. The pest responsible for widespread grain losses is the rat. Over a six-year period from 1926 to 1931, 5.5 million rats were killed in Krain alone.(20) The annual saving of padi was estimated as sufficient to feed 12,000 people each year.(21) Over 100,000 rats are destroyed each year in Kedah. Rats, and the damp weather, result in an estimated 10 per cent loss of padi kept under local

---

(18) See Grist, D.H. "The Rice Problem" (Journal of Tropical Geography, Vol. 5 1955) p. 22.

(19) "Notes on Current Investigations, July-September 1953, (Malayan Agricultural Journal, Vol. XXXVI, No. 4, 1953) p. 250.

(20) See Editorial, Malayan Agricultural Journal (M.A.J.) Vol. XIX, No. 3, 1931, p. 111; also F.W. South, "Rat Destruction in Malaya", pp.112-122.

(21) See "Report of the Rice Production Committee, 1953, p. 81; also Straits Times, 2nd December, 1954.

storage conditions.[22] Insect pests of which there are some seventy-four species in Malaya,[23] attack both the plant and the ears. Experiments have shown that the difference in yields between a padi crop attacked by borers, and one protected against them may be as high as 715 lbs. per acre.[24]

In 1962-63 season for example, about 6,500 acres of padi were destroyed by pests and disease. Of these, more than half happened in Kedah alone, (Table 5.2) mainly destroyed by drought, flood, salt water, pests and disease.

The urgent necessity of increasing the production of rice by all means directs attention anew to the part played by diseases in lowering yield. Knowledge of the diseases and early diagnosis may obviate preventable losses, while in the prevention and early treatment of diseases, improved cultural methods and better water control will be found of great importance. The new insecticides may prove effective against certain pests, but their application in the smaller, scattered padi lands depends upon the cost factor.

---

(22) See Report of the Rice Production Committee, 1953, pp. 66-67.

(23) See N.C.E. Miller and H.T. Pagden, "Insect Pests of Padi in Malaya", (M.A.J., Vol. XVIII No. 6, 1930) pp. 289-292.

(24) See G. H. Corbett, and H.T. Pagden, "A Review of Some Recent Entomological Investigations and observations" (M.A.J., Vol. XXIX, No. 9, 1941) p. 350.

*

Table 5.2. Acreage of padi destroyed by pests and disease. (season 1962-1963).

State	Area planted		Area destroyed	
	Acres	Percentage of total	Acres	Percentage of total planted acres.
Johore	8,930	1.0	40	0.4
Kedah	289,350	30.7	3,380	1.2
Kelantan	191,300	20.3	360	0.2
Malacca	31,160	3.3	250	0.8
N. Sembilan	31,230	3.3	-	-
Pahang	44,570	4.7	150	0.3
Penang & P. Wellesley	39,290	4.2	20	0.1
Perak	124,480	13.2	650	0.5
Perlis	64,550	6.9	-	-
Selangor	50,260	5.3	140	0.3
Trengganu	66,560	7.1	890	1.3
Main Season Crop	941,730	100.0	5,880	0.6
Off-Season Crop	46,190	-	610	1.3
Total	987,920	-	6,490	0.7

* Including wet and dry padi.

Source: Rice Supplement to Monthly Statistical Bulletin of the Federation of Malaya, 1963. Table 1.

(iii) Varieties. There is much room for increasing yields in the tropics through the planting of improved varieties of seed. The problem of selecting improved seed varieties is a very complicated one because each strain selected has to be suited to a particular set of environmental conditions. The majority of padi varieties in Malaya are long-maturing, because of the lack of water control and because agricultural conditions preclude the growing of short-term varieties.(25)

(25) See K. Ramiah, "Factors affecting rice production", F.A.O. Development Paper No. 45 (Rome 1954). pp. 3-4.

FIG 34

PADI EXPERIMENTAL STATIONS

BASED ON THE DATA OF 1960 SUPPLIED BY THE DEPT. OF AGRICULTURE.

Experimental and test stations have been set up in all the important rice areas (Fig. 34) and right from the beginning with the establishment of the station at Titi Serong in the Krian area, have proved of immense value. But the fact that it is not easy to persuade the farmers, who have built up elaborate traditions and prejudices regarding padi cultivation to adopt the new pedigree strains of seed. High yields alone are not sufficient, the grain must have suitable cooking and milling qualities as well as eating flavour. It may happen, therefore, that the demand for the seed of certain high yielding varieties falls far below expectation.(29)

(iv) Cultivation techniques. Padi-planting techniques in Malaya have been developed over a long period of time, and in seeking to increase crop production, either by methods of cultivation or through modifications of existing methods, there is always the difficulty that the new techniques may not be suited to a particular local environment. Also, even if they are suitable, tradition and custom may form a barrier resistant to all efforts at change.

Variations in customary methods of padi cultivation in Malaya due chiefly to local differences in the soils, distribution of rainfall, water supply and topography, but the basic pattern remains the same. In most cases the seeds are sown in small prepared nurseries, and the seedlings are later transferred to the flooded fields. After cultivation consists of frequent weeding operations, and of regulating the water supply. The land is drained before

---

(29) See F.M.S. "Report of the Rice Cultivation Committee", Vol. II, p. 59.

the crop ripens.[30] After the harvest it lies fallow until the next planting. The methods of preparing the land for transplanting depends on the nature of the soil, and the economic position of the farmer. Ploughing and harrowing with buffaloes is the usual practice in Kedah, Perlis, Kelantan, and Malacca. Farmers in other parts of the country do not plough the fields, but cut down the fallow growth just below the soil surface with a scythe called the "tajek". The vegetation is then allowed to rot for some time under water. This method is common in those areas (especially Krian and Pahang), where the very deep and soft muddy soil prevents the use of the plough, because the buffaloes would founder in the mud.

The systems of cultivation practised in Malaya have been devised in the light of practical experience over many decades, and usually succeed in overcoming local difficulties. But they demand the expenditure of much labour, which is perhaps of little account where labour is plentiful and therefore cheap, but where padi growing must be considered as an economic proposition rather than a family tradition, methods must frequently be modified, or new systems devised. Thus, while mechanization of padi cultivation may not usually improve on the time-honoured hand cultivation, it may prove more economic.[31] Its adoption will, in many cases, enable larger areas to be developed, especially in regions where labour is scarce, while it also enables advantage to be taken of favourable weather conditions. Mechanized cultivation has come to stay, but it is more suited to large areas of flat land than to situations where divisions in the field are small and numerous, and where there are many owners of small areas of land.

---

(30) See "Padi Planting Methods in Malaya", (M.A.J., Vol. XXVII, No. 2, 1939) pp.42-59.
(31) See Haynes, D.W.M., "Rice Mechanisation in the Federation of Malaya" (The International Rice Commission News letter, No. 16. December, 1955).

The possibilities of introducing mechanical methods of cultivation to speed up the rate of work, and to take advantage of favourable weather conditions and so prevent late planting are being tested in Malaya.(32) Production may be increased if the work of cultivation is accelerated by mechanization, so that a sufficiently long off-season remains for double-cropping, or if mechanization enables the farmer to work a larger acreage of land. The possibility of increasing yields by deeper ploughing with tractors has also been tried experimentally.

"The technical difficulties are experienced in mechanizing the operations of padi cultivation. This is mainly due to the use of implements devised primarily for the cultivation of dry-land crops and unsuited to the conditions peculiar to padi cultivation. Further research on the adaptation of machinery for padi cultivation is therefore necessary. Successful mechanization of padi cultivation demands highly efficient control of an adequate supply of irrigable water. Any attempt to mechanize padi cultivation without first being assured of complete water control at all times is doomed to failure."*

In short, the average yield of rice in Malaya varies greatly from region to region and from season to season. They are, however, dependent on the degree of water control, the varieties, the planting techniques, the ravages of pests and diseases, and the fertility of the soils. The crop in any one season may be totally or partially destroyed because of late planting, drought, floods or the depredations of pests and diseases. The consequences of the the loss of a season's harvest on the padi planter are far-reaching. Although actual starvation seldom occurs, the planter will have to find a means of

---

(32) See Hartley, C.W.S. "Investigations into the Mechanical Cultivation of Wet Padi 1948-1949" (M.A.J., Vol. XXXII, No. 3, 1949).

* See Ooi Jin-Bee, Op. cit., pp. 245 – 247.

supporting himself and his family until the next harvest. The usual way out is to obtain an advance in cash or in kind from the village shopkeeper-cum-moneylender at an exorbitant rate of interest.

Fishing.

Malayan fishing is still largely a matter of traditional methods, whether Malay or Chinese. These traditional methods of the two local races differ considerably, Chinese methods being more highly capitalised, particularly in the use of fishing stakes, or fixed mass-traps for fish. Wealthy businessmen who are also interested in fish distribution, contribute a good deal of the capital, and their operations are a source of anxiety to the Malays. Many of the Malay fishermen have a high degree of traditional skill, but their methods of maintaining their gear are based more on customs of mutual help and cultivation of communal feeling than on a market economy of saving, borrowing and buying productive assets. Their economy is threatened by lack of access to suitable markets and by easy credit and consumption undermining their way of life, rather than by lack of seamanship, fishing skill, or mechanical ingenuity.

A more equal and co-operative partnership between Chinese enterprise, commercial skill and capital, and Malay seamanship and mechanical ingenuity, could no doubt achieve much more rapid improvement in production of this important source of protein and fertiliser, than is actually likely to occur. For low standards of education and a long history of rivalry are difficult to overcome.

The output of Malayan fishermen is very low. Firth calculated that the Malay fisherman produces an average of 1.5 tons of fish per annum. The output

of the British fisherman is six to eight times larger in bulk, and twelve to fifteen times higher in value.(33) The low income of Malay fisherman is not only caused by the traditional methods, the lack of access to suitable markets, the lack of capital and the low standards of education; two other factors responsible for the low output must also be considered; (i) the high seas and bad weather associated with the Monsoons exert a strong influence on fishing activities, and induce a seasonal drop in production along both coasts. The drop in production on the east coast between December and March coincides with the North-east Monsoon, and the drop between July and October on the west coast coincides with the South-west Monsoon. (ii) The output of fish varies with the presence or absence of fish shoals. It has been found that the principal types of pelagic fish along the west coast could only be caught during certain periods of the year.(34) "Kembong" (a type of mackerel) can be located only during dark moonless nights when the phosphorescence caused by the movement of the shoals is visible, so that on clear nights the catch may fall considerably.(35)

Due to the seasonal variations in production and also because of his low income, the fisherman has to find some other means of tiding over the periods of enforced leisure when he is unable to go to sea. There are three

---

(33) See R. Firth, "Malay Fishermen: their Peasant Economy", (London, 1946), p. 6, and "The Peasantry of South-east Asia", pp. 504-506.

(34) See C.N. Maxwell, "Preliminary Report on the Economic Position of the Fishing Industry of the Straits Settlements and Federated Malay States", (Singapore 1921), Appendix A. p. 12.

(35) See Annual Report of the Fisheries Department of the Straits Settlements and the Federated Malay States, 1937 (Singapore 1938), Appendix A, pp. 6-8.

possibilities open to him. Firstly, he may try to save a certain portion of his income earned on the days he goes out fishing, and put that aside for use during the off-days. Secondly, he may borrow money and goods from the fish dealer or shopkeeper. This is a common way out. Finally, he may try to earn some money by working in secondary occupations. He may take on any of the other rural occupations. An examination of the secondary occupations of sixty-two fishermen in Peropok for example, showed that thirty-two men were cultivating padi and doing other forms of agricultural work, thirteen were engaged in making nets and boats for sale, ten were fish dealers, and the rest were occupied in a number of miscellaneous jobs.(36)

The ability to supplement income by alternative occupations depends on the opportunities for other employment, that is, on the proximity of the fishing village to cultivable land, to a rubber or coconut estate, to a mine or a town. The very sandy soil along the Pahang coast, for instance, makes agriculture almost impossible, and the fishermen there have to find some form of non-agricultural work, such as rattan-collecting and mat-making, during the off-season. The standards of living of the fishermen are, therefore, related to the availability of alternative sources of income during the off-season as well as to variations in the fish output. In an area where the fish output is small, and off-season employment opportunities are limited (as in Pahang and Trengganu), the fishermen's living standards are correspondingly low.

---

(36) See Firth, "Malay Fishermen", Table 4, p. 78.

Some Socio-Economic Aspects.

Generally, the causes of rural poverty of the farmers and fishermen, both Malay and Chinese are several; not only is their production not well organised, but the marketing problems prevent them from receiving a fair return for what they have sold.

For example, Chinese market-gardeners in Perak have been known to receive only 40 cents per picul for their sweet potatoes which were subsequently retailed for M$ 1.00 per picul.(37) A two-year survey of the fish trade in Kelantan revealed that the margin between the prices obtained by fishermen and those paid by the consumer was as high as 400 to 500 per cent.(38) In Malacca, it was found that the difference between the average kampong prices and the average market prices for ten of the most common kampong fruits was at least 100 per cent.(39) The 1931 Rice Cultivation Committee discovered that padi-growers in Krian received only 60 per cent of the market value of their crop. The 1953 Rice Production Committee found that conditions had not changed, for in 1952 when the Government minimum price for padi was M$ 17 per picul, many peasants received prices several dollars below the minimum price.(40)

---

(37) 1 picul = 100 katis = 133⅓ lb.

(38) See Third Inter-Departmental Agricultural Conference. Report of Proceedings (Kuala Lumpur, 1933), p. 194.

(39) See Annual Report of the Fisheries Department, Federation of Malaya and Singapore, 1948, pp. 9-12. "The Economic Development of Malaya", by I.B.R.D. (1955) p. 331. Also, Report of the Committee Appointed to Investigate the Fishing Industry (Kuala Lumpur, 1956), App. B, Table 6, p. 24.

(40) See G.D.P. Olds, "A Survey of Fruit Production in Malacca Territory", (M.A.J., Vol. XXI, No. 2, 1933), p. 62.

(41) See Report of the Rice Production Committee, 1953, p. 22.

The effect of the low prices on the standard of living of the peasantry varies with the extent to which they are dependent on cash-crop production. Those who specialise in producing for the market are naturally affected most. But since the majority of farmers and fishermen sell at least a part of their produce, they are to that degree the worse off for receiving poor prices, and it is apparent that their economic position would be appreciably improved if they were to receive more equitable prices for their goods.

The monopolistic rings and combines referred to earlier are the outward expression of the imperfect marketing conditions which enable the middlemen to manipulate the prices at both ends - the producer's and the consumer's.

Normally the markets are either in the urban centres or outside Malaya altogether. The peasant smallholder growing export crops is thus separated from the consumer, not only geographically but also socially. In consequence a long and frequently complicated chain of intermediate links is needed to bridge the gulf between producer and consumer. The intermediaries who forward the peasant's produce as well as supply him with imported goods, are the processors, transporters, wholesalers, retailers, moneylenders, shopkeepers, and the like. All of them play a part in the distributive process and all of them derive their profits by so doing. The accumulated charges are usually laid at the door of both the consumer and the peasant producer. Moreover while the wholesaler dealing in large quantities may be content with a small percentage of profit, further down the chain the absolute amount of money involved becomes less, so that the percentage of charges must be increased to make the business pay. The small retailer and shopkeeper, who are the final links with the peasant producer, are consequently apt to expect a fairly

large percentage of profits precisely because of the small amount of business done with each individual peasant. The final effect of these charges takes the form of low prices for primary produce.

There are also problems of distance, and the availability of transport between the farm and the towns and ports. Transport charges increase with distance from the market. The peasant in the earlier days found his market in the fairs. Today the markets are located in the towns and ports along the western Tin and Rubber Belt, and are very far from the large number of the dispersed rural population. Because of inaccessibility, and the small amount of produce he can offer for sale at any one time, the peasant cannot take advantage of bulk transportation, whereas estates, also situated in the rural areas but much nearer the markets, are able to do so. Under these circumstances, the peasant has again to pay a disproportionately large amount in transport costs.

Another factor which places the peasant at a disadvantage is the necessity for him to dispose of his produce quickly, partly because of the lack of storage facilities, and partly because of his need for cash. The storage of surplus crops, or fish, is influenced by seasonality of production and climatic conditions. Rubber, and to a certain extent coconuts, can be tapped or collected and marketed regularly, thus avoiding a glut and a fall in price. But with such seasonal crops as padi and certain common fruits (durians, mangoes, and rambutans etc.), this is impossible. Again, processed rubber can be stored for an appreciable length of time without deteriorating in quality or in value, whereas most of other agricultural crops are perishable. Padi, for example, if stored in the husk can maintain its good condition for

about two years, while milled padi will not keep as long and is more liable to attacks by pests and fungus. Most ripened fruits, and fish must be disposed of quickly.

"The shortage of transport facilities, and long distances to the markets put the peasant in a weak bargaining position, and he has often no alternative but to accept the low prices quoted by the middleman."(42) The high percentage of fish salted every year is another indication of the need for storage facilities (e.g. freezing) and quick transport.

The peasant is frequently in desperate need of cash, and is therefore anxious to sell his produce as quickly as possible and will be content with low prices. The question of cash shortage is connected with the problem of rural indebtedness.

This is common amongst all classes of peasants, though no detailed information is available as to the exact extent of the debts as the borrowers often do not know, and the lenders are unwilling to reveal the figures.(43) A sample survey of 1,367 Malay coconut smallholdings in the Jeram Malay Reservation of Kuala Selangor was conducted by the Agricultural Department in 1932. The smallholders in about 900 of the holdings were discovered to be in debt to the dealers and shopkeepers. The monopolistic position of the dealers, and their strong hold over the smallholders as creditors, enabled them to dictate matters, and to purchase coconuts from the smallholders at one cent each instead of the ruling kampong price of 1.4 cent each. Consequently, the smallholder with a six-acre holding received an income of only M$ 150 per annum instead of M$ 210.(44)

---

(42) Ibid.

(43) See Third Inter-Departmental Agricultural Conference, Report of Proceedings, p. 48.

(44) See F.C. Cooke and J.H. Simpson, "Copra Production by Malay Smallholder", (M.A.J., Vol. XX, No. 7, 1932) pp. 340-344.

A Government Vegetable Oil Committee found coconut smallholders heavily in debt practically everywhere, and uncovered evidence showing that in many cases the peasants were not obtaining the full value of their produce because of their state of indebtedness.(45) Another enquiry of 154 fruit-growing smallholders in Malacca showed that 25 per cent of the peasants in the Central District, 23 per cent in Alor Gajah, and 20 per cent in the Jasin District were in debt. The average of 23 per cent for the whole of Malacca was below the actual figure, as many smallholders were reluctant to give information about their economic status.(46)

The very unfavourable position of peasant fishermen, as a result of their being over-dependent on the fish-dealers, was first pointed out by Stead in his surveys of Malayan fisheries in 1923. He estimated that 99 per cent of the regular fishermen were bound to a middle-man dealer, and through indebtedness were forced to sell their catches at prices fixed by the dealer. These prices were very low in relation to the market prices, but high enough to keep the fishermen on the margin of subsistence.(47)

Indebtedness in padi-growing regions appears to be more widespread than was once thought. The Rice Cultivation Committee of 1931 received evidence that 40 to 90 per cent of the peasants in the main padi-growing areas were in debt, either to Chettiars, or to Chinese rice dealers and shopkeepers.(48) In

---

(45) See "Report of the Vegetable Oil Committee on the Present Economic Condition of the Coconut and other Oil-Producing Industries", (M.A.J., Vol. XXII, No. 9 1934) pp. 411-418.

(46) See Olds, op. cit., pp.60-61.

(47) See D.G. Stead, "General Report upon the Fisheries of British Malaya", (Sydney, 1923). pp. 60, 126, and 112-115.

(48) See Report of the Rice Cultivation Committee, Vol. I, p.40.

Province Wellesley, for example, the "penghulu" (headman) of Sungei Acheh estimated that three-quarters of the population in the district were in debt. In Penang 90 per cent of the planters in Balik Pulau District owned money to Chettiars and Chinese shopkeepers. In Kedah, half of the padi-growing population was in debt for varying amounts. Similar figures were quoted for other areas.

A common cause of indebtedness was the granting of credit under the "padi ratus" or "padi Kuncha" system, under which interest rates were anything up to 100 per cent.(49) The 1953 Rice Production Committee reported scarcely any change in the general position. The system of "padi kuncha" was found to be most prevalent in Krian, Province Wellesley, Kedah and Perlis.(50)

It is evident that under these conditions "there can be no improvement in peasant standards of living. Shackled as they are to the middlemen, money-lenders and shopkeepers by the bonds of their debts, any fruits of improvement will go immediately to the creditors in the form of interest payments and high prices for consumer goods. To prevent this, a means of providing the necessary credit facilities under equitable terms or co-operative organisation must be substituted for those provided by the money-lender."*

It should be pointed out that the economic relation between peasant producers and middleman is fundamentally a relationship between two distinct economic groups. It happens that in Malaya the middleman and professional

---

(49) The term of "padi Kuncha" is very simple: some time before harvest the farmer receives goods and money from the creditor, and promises in return a kuncha of padi at harvest time. See also "Report of the Rice Cultivation Committee, Vol. II. pp. 108-114.

(50) See "Report of Rice Production Committee", 1953, pp. 21-22.

* See Ooi Jin-Bee, 'Rural Development in Tropical Areas, With Special Reference to Malaya'. (1959).

money-lenders with whom the Malay peasants have dealings are mostly Chinese and Indians. This has often given rise to the complaint of racial exploitation of the Malay peasants by the Chinese. In considering the problem of peasant indebtedness it is necessary to avoid confusing the racial with the economic relationship. The relationship is due to the economic circumstances of each group, not to their racial character. In India for example, where the members of different economic groups are members of the same race, the problem of indebtedness is similar, the Indian peasant is often indebted to the professional money-lender or the middleman, who is a member of the same race. Similarly, the Chinese peasant in Malaya may be indebted to the Chinese middleman or shopkeeper from whom he has obtained goods on credit.

The emphasis on the racial aspect misses the crux of the problem. What is important is that the economically weak must be taught to organize themselves, so that they may be able to achieve sufficient independence to dispose of their produce at an economic price.

The problem of peasant indebtedness is only a special aspect of the general problem of increasing the productivity of agriculture and raising the standard of living of the peasants. The effectiveness of the co-operative method in improving the conditions of peasant economy is limited, unless the problems are attacked on a comprehensive scale.

Co-operative principles must be applied not only to the solution of the problem of indebtedness but also to the whole field of production and distribution of agricultural produce.

These include the producer who, whether he be farmer or craftsman or fisherman, becomes less self sufficient for his daily requirements, and

increasingly dependent on the purchase of food and other necessities. With the introduction of new crops, improved strains of planting materials, and new techniques, this dependence on outside resources widens to include many of the essentials of production.

New or improved planting materials, better tools, better class of yarn for weaving, faster dyes, chemical fertilizers and many other items may be required for the changed production, many of which will have to be obtained from outside the rural economy, and all of which will require a capital outlay substantially in advance of the anticipated return. Consequently the need for credit is a very early development in the growth of specialisation and production for the market, and the provision of such credit plays an increasingly important part in the productive organisation of the rural as development proceeds.

In particular, experience of rural co-operation in other countries shows clearly the importance of co-operative marketing and processing as a means of solving the economic problems of the peasant. For the economic conditions of the peasant depend not only on the productivity of his land but also on the value which he obtains from the sale of his produce. Where, as in Malaya, the peasant markets his produce through the middleman, who has a monopolistic position, the price which he receives may be very much below the prevailing market price as we have pointed out before. The peasant is often under contract to sell to the middleman to whom he is indebted. The result is that the income which a peasant derives from his produce is often scarcely sufficient to maintain him above the level of bare subsistence.

In many countries great progress has been made in the marketing of

agricultural produce through co-operative organizations.[51] But in Malaya, co-operative marketing is still in its experimental stage. Although several attempts had been made in the last few decades since the first Co-operative Societies Ordinance was introduced in 1922, most of the processing was not successful.

The difficulties of promoting co-operative marketing among the Malay peasants have been such that progress has hitherto been insignificant. They are to a large extent due to the human factor. This is also true of the development of rural credit co-operation. The success of agricultural co-operation in Denmark for example, has been possible owing to the high standard of literacy of the Danish peasant and his loyalty to co-operative principles. The same degree of success from the application of co-operative methods is not possible among illiterate peasants, who have no experience of business organization.

"The co-operative method is a technique of dealing with the economic problems of the small man, be he a farmer or an industrial worker. To make use of this technique the members must be adequately trained."[52] It is obvious from this that the illiteracy of the Malay peasant must act as an obstacle to progress.

This difficulty is aggravated by his conservatism. The modern co-operative method is still an unfamiliar technique to him. He is not willing

---

(51) For example, in Denmark a high percentage of the butter and cheese exported is handled by co-operative export associations. In Norway and Sweden, a similarly high proportion of the butter produced in the country is marketed by co-operative dairies.

(52) See Lim Tay Boh, "The Co-operative Movement in Malaya" (Cambridge, 1950).

to adopt innovations unless he is convinced of the economic advantages he can derive from them.

The peasants are as yet not conscious of the potentialities of modern co-operative organisations in improving their economic position. To arouse their interest in co-operative activities, it is necessary to provide for their systematic education in the principles of co-operation and to encourage the widespread propaganda of the value and possibilities of co-operative associations.

Moreover, it must be emphasized that co-operation, especially co-operative marketing, is a business venture, calling for initiative, enterprise, and sound administration. The peasants brought up as they are in the simple rural economy of the kampong, lack business experience, and unless they can adapt themselves to the conditions of the modern exchange economy, they will be unable to handle the specialized functions of collective marketing and purchase of their produce.

On the whole, within the context of the central problem of raising standards of living, that posed by the primary sector of the national economy is the most vital and also in many respects the most intractable. More than half of the working population is employed in the primary sector, though this figure may be somewhat misleading because there is certainly a good deal of rural underemployment. The huge work force at present in agriculture - partly because of ignorance of modern techniques, partly, in some areas, for lack of irrigation facilities which would enable cultivation to be extended into the dry season, and partly because of the need of better marketing arrangements, more modern equipment and more fertilizers - can as a whole produce at present

barely enough food to feed the peoples of the area. Although cultivation by relatively primitive methods is intensive, yields are low by international standards.

Rural education and technological improvements such as the wider provision of irrigation facilities can obviously play important roles in the long run in raising yields, but the overall problem of agricultural improvement cannot be so simply solved. On the economic side, the establishment of rural credit agencies on a much wider scale could help prevent farmers falling into the hands of local moneylenders and having to pay extremely high rates of interest. In this way some of the numerous small-scale improvements of a self-help nature that are possible with a little capital could be brought about. Perhaps most of all, there is an urgent need for solutions to be found through effective government legislation to the acute problems of land tenure that afflict parts of the rural area.

Land Tenure.

"The raising of living standards pre-supposes increased production, but improvements in agricultural methods and techniques are often necessary before this goal can be attained. The prevention of soil erosion and the maintenance of soil fertility, the use of manures and fertilisers, the introduction of better crop varieties and the dissemination of practical information on tillage methods, crop varieties, and conservation practices are all basic to the development of peasant agriculture. To produce the large and regular surpluses needed for higher living levels, a change has to be made from the subsistence mode of existence to production for the market, with a corresponding change of techniques. A new equilibrium must therefore be established between the

population and the land, and this can only be achieved through a system of tenure which permits the technical changes to be made.**

According to the official report land tenure in Malaya seems to be a minor problem. "Over the country as a whole, tenancy of agricultural land is not very common, but in some rice-growing districts much land is cultivated by tenants".(53) But Prof. U. Aziz has estimated that "about half of the rubber and padi farm land in Malaya is rented land", and that "more than half the rubber and padi farmers do not own the land they work on".(54)

This last estimate has been borne out by surveys in Kedah and Perlis on the ownership of rice land. In Kedah, the state with the largest area under rice, 51 per cent of the 233,000 acres was worked by tenants, and in Perlis, which has more than 55,000 acres of rice land, 41 per cent of the land was worked by tenants.(55)

In some areas of Province Wellesley it is estimated that 80 per cent of the planters do not own their land "because they took up rubber and mortgaged their land to Chettiars and lost it when the price of rubber fell".(56)

Very little is known about the structure of ownership of padi land. A recent study of 102 estates of deceased persons showed that three estates

---

(53) See Federation of Malaya, "Annual Report 1955". p. 140.

(54) U. Aziz, "Straits Times, 28th Jan. & 1st March, 1957".

(55) See "Rice Committee Final Report" (Kuala Lumpur 1956) p. 10.

(56) See "Rice Committee Report" Vol. I (Kuala Lumpur 1953) p. 94.

* See Ooi Jin-Bee, Op cit.

accounted for 56 per cent of the padi land.[57] Also, "it is estimated that not more than 2,000 families own not less than two-thirds of the padi lands of North Malaya".[58]

The high concentration of ownership in Malaya may have escaped notice because of the large number of land titles. In other Asian countries where the problem of the landlord has received very great attention, the estates have covered hugh tracts of land. These vast estates were plain to see and have caught the attention of economists and politicians. But the position is much less obvious where the land titles are for small areas and concentration lies in holding great numbers of them. Only a painstaking study of land registers will give some idea of the degree of concentration. Such a study is yet to be made.

An indication of concentration of ownership, despite a large number of land titles, is given by the three estates in Wilson's study. They involved 180 land titles making a total of 1,020 acres of land or 56 per cent of the padi land belonging to the 102 estates.[59]

In general, more than half of the farm land in Malaya is now owned by the operators. It is frequently rented by tenants who have to pay the owners or landlords a rent which is equal to 25 per cent to 50 per cent of the gross value of the crop. In addition, many landlords are able to extract "tea-money" from new tenants and other forms of concealed supplementary rent payments.

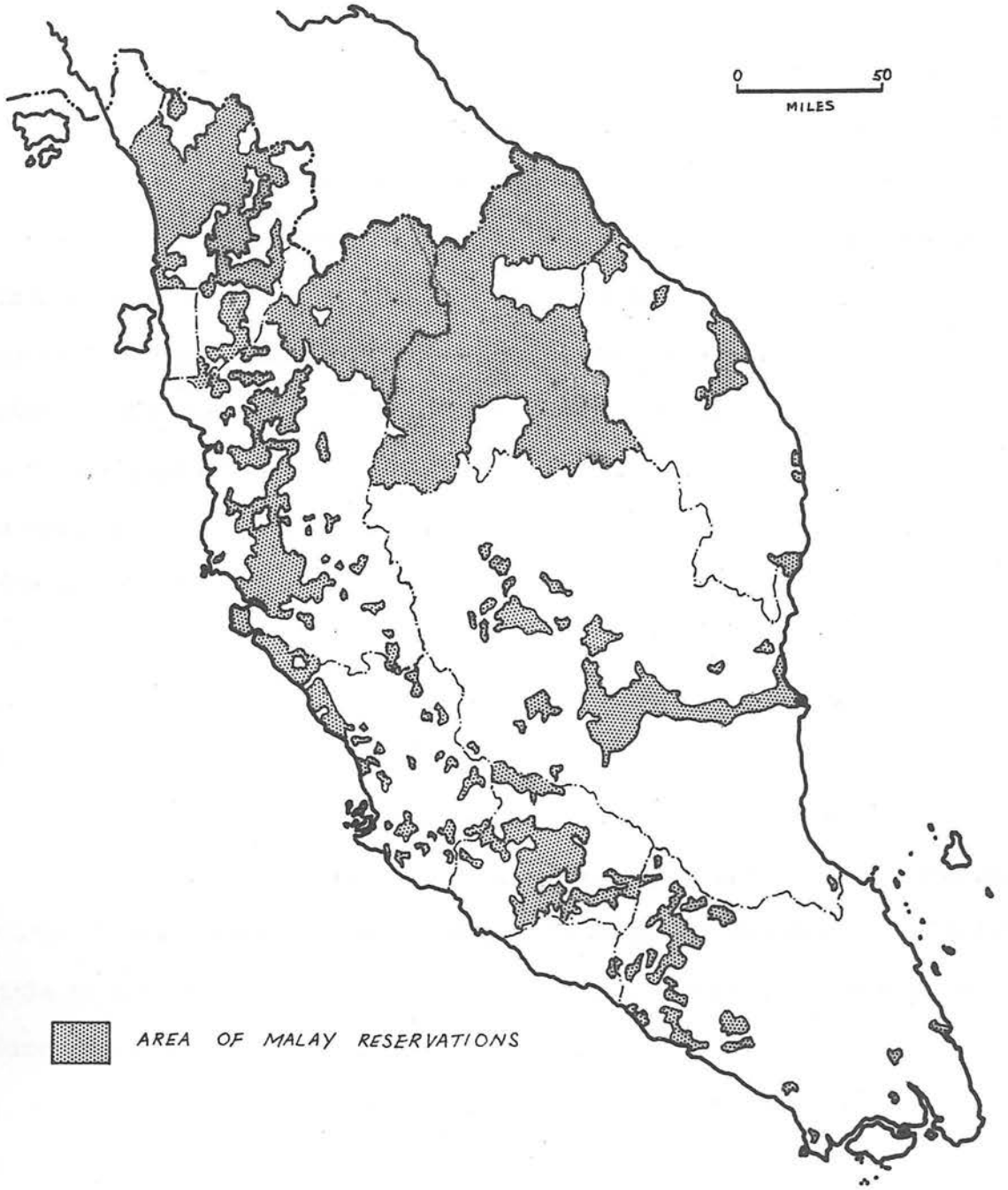
---

(57) See T. B. Wilson, "Economics of Padi Production in North Malaya" (Kuala Lumpur, Dept. of Agriculture). 1958. p. 65.

(58) Ibid. p.66.

(59) See T. B. Wilson, op. cit. p. 65.

FIG 35
MALAY LAND RESERVATIONS



BASED ON IBRD REPORT (1955).

It has been generally recognised that indebtedness is a cause of change in the ownership of land. It was in an attempt to prevent land changing hands through debt that the Malay Land Reservation Ordinance was passed in most of the States. (Fig. 35.). These laws generally apply to padi lands. The law prevents these padi lands from being transferred into the ownership of non-Malays.(60) These laws have not, however, helped the Malay farmer to retain his land. The laws simply restricted ownership of land to one community. Farmers still get deeper and deeper into debt through the "mortgage" of their harvest. Sooner or later the harvest does not meet a farmer's debts and he has to mortgage his land. He cannot mortgage it to a non-Malay - though his creditor is certainly likely to be a non-Malay - so a Malay has to be found and the land is mortgaged to him.

The farmer gains nothing by being prevented from mortgaging his land to a non-Malay; in fact he loses. The limitation of possible buyers of land lowers the price of land. Well-to-do Malays are few and they can value land at very low prices and charge very high rates of interest. Usually the farmer who mortgages his land is already so deep in debt to the shopkeeper or money-lender, that the land-mortgage is an act of desperation; it does little if anything to free the farmer from his dependence on the shopkeeper or money-lender.

Opinion on the value of the Malay Reservation laws is divided. Some economists have thought well of them on the ground that they have prevented the loss of land holdings. But facts now available show that the loss of

---

(60) The Malay Reservation Enactment was first passed in 1913. Later on an amendment to this Enactment was passed in 1933. For detail, see Appendix IX.

land by farmers in spite of the Reservation laws has been very great indeed. Tenant farming among those who were supposed to have been protected by these laws is far greater than is acknowledged.

Furthermore, the argument for the Malay Reservation has been particularly strong in those areas of predominantly Malay settlement where increasing fragmentation of holdings and the inroads of the other ethnic groupings, chiefly Chinese smallholders and European estate operators, have disenfranchised the economically vulnerable Malay peasant farmer. But the argument for the continuance of the reservations is less strong, however, in areas of relatively sparse settlement which must remain unused until and unless Malay pioneers decide to move into them. Since these areas contain large forest resources and might contain substantial deposits of tin ores, their continued reservation militates against the expansion of the Malayan economy as a whole.

On the other hand, the fragmentation of peasant farms[61] has commonly occurred in Malaya, since most of the peasant farmers in Malaya are Muslim Malays, and they follow a mixture of customary and Muslim law[62] except in the northern Malay States where the laws of inheritance are now based exclusively on Mohammedan tenets.[63] Mohammedan law required that a man shall receive double

---

(61) A fragmented farm may be defined as one made up of two or more non-contiguous parcels of land. A highly fragmented farm may be made up of several parcels of land scattered over a wide area.

(62) The laws of inheritance and succession demand the splitting up of land into a number of parcels to be shared among the heirs. Such laws prevail in most Muslim countries.

(63) See Winstedt, R.O., "The Malays, a Cultural history" (London, 1950) p.115.

a woman's share when the land is cultivated by their joint labour. But since in the cultivation of wet padi the wife's share of the labour is considerable, the customary laws of Perak, Selangor, Pahang, Trengganu and of the other Malay States lay down that the share of the widow, on the husband's death, shall not be one-third but half of the property. The other half is divided, according to Muslim rule, among the children.(64)

The splitting up of farm land, whether by the normal process of property transfers due to the death of the owner or as a result of outright sale, or both, often leads to the creation of fragmented farms.

There is no detailed information on the extent to which physical partition has been carried out. The Rice Production Committee has pointed out that in Negri Sembilan, many holdings are so small after partition that they are uneconomic to cultivate and yields are low. Partition here has been "by agreement rather than by survey, but the practical effect has been the same."(65) Until recently, the 1960 Census of Agriculture provides, for the first time, data on the extent of fragmentation of peasant farms in Malaya. According to the Census, "the highest proportion of not fragmented farms are found along the west central belt of Malaya, from Penang and Province Wellesley to Negri Sembilan, and in the State of Johore. In contrast, there are five main areas where 20 per cent or more of the peasant farms are highly fragmented; (i) the Kelantan delta; (ii) the Trengganu delta and Ulu Trengganu; (iii) the District

---

(64) See Wilkinson, R.J., "Law, part I. Introductory Sketch: Papers on Malay Subjects". (K.L. 1908) pp. 51-52.

(65) See "Report of the Rice Production Committee", 1953, p. 116.

of Temerloh in Pahang; (iv) Upper Perak, and (v) the Districts of Pahang Terap and Sik in Kedah."

Excessive fragmentation of land has many adverse effects on farming. "The wide dispersal of fields means that extra and unnecessary effort, time and expense will have to be spent in moving implements, draught animals, seeds and workers from one field to another, often over a great distance. It leads to uneconomic and inefficient holdings."* Prof. Aziz has also pointed out that "not only does fragmentation occur when say a farmer's 2 acres of rented padi land are a mile away from the 3 acres of rubber land around his house, but it also occurs when he has his padi land located in an area which is inconvenient to get to from his rubber land. Thus, fragmentation is not solely a function of distance. If communications are good and the farmer can cycle or take a bus from one piece of land to another, then the pieces of land can be located quite far apart. On the other hand, if they are separated by a river that is difficult to cross or by an estate that does not allow a right of way, then even one quarter of a mile makes the farm fragmented."

The fundamental consequence of these processes is to cause rural poverty. As a result of fragmentation, it is not possible to use equipment or techniques that would result in a high output. Furthermore, the different owners or operators may follow different schedules of operation, thereby interfering with the arrangements of their neighbours. Some operators may not clear their land of undergrowth, thereby endangering their neighbours' crops with pests or diseases.

---

* See Ooi Jin-Bee, 'Some Aspects of Peasant Farming in Malaya'. (1965).

However, as the farm population of Malaya increases and greater pressure is exerted on available land, it is to be expected that the problems of excessive sub-division and fragmentation of agricultural land will become accentuated and more widespread in occurrence. Also, because of the land legislation and policy are prerogatives of the individual States, the Federal Government has not been able to pass legislation restricting excessive sub-division of arable land. There is a need for a common land policy and land code in Malaya as the first step to solving many of the land problems, and as an essential prerequisite to planning for land development.

In any case, rural development is the planned process which uses any type of action or communication designed to affect the institutions, techniques, environment and minds of the rural people in such a manner as to raise their standard of living and improve their way of life.

Thus, in carrying out economic development at any given time and place, the principle of economy must never be overlooked. (66) Robbins has described this as the disposal of scarce means that have alternative uses for the achievement of given objectives. However, this principle which is excellent for a static analysis must be complemented by a second principle so that a dynamic approach towards economic development may be obtained. (67) Myrdal has called this "the principle of circular causation and the tendency for a social process to become cumulative and often to gather speed at an accelerating rate". This can be called the principle of cumulative causation.

---

(66) See Robbins, L., "An Essay on the Nature and Significance of Economic Science", London, 1932. Ch. 1.

(67) See Myrdal, G., "Economic theory and underdeveloped regions", (London: 1957). pp. 13-14.

Therefore although at any one time we must face the problem of limited resources, with proper regard for the principle of cumulative causation we can plan to achieve vast changes of an economic as well as non-economic nature from correct disposal of the scarce resources.

Thus from the long-term point of view, an investment of money and staff in a land reform programme may increase output to a much greater extent than similar expenditures in a fertilizer programme although in terms of static analysis the fertilizer scheme may appear to offer better immediate returns.

Rural Development Schemes.

The Malayan Government has given high priority to the expansion of agricultural production and the raising of living standards of the predominantly Malay rural people. The aim is given to attain eventual self-sufficiency in essential foodstuffs through a quantitative and qualitative increase in agricultural production, crop diversification and increased education facilities in rural areas. The Department of Agriculture has also conducted programs to bring security to farmers by improving marketing systems and providing financial assistance.

Rural development is undertaken at both the state and Federal level, but under the co-ordinating influence of the Ministry of Rural Development. When the states are unable to meet the cost of development, funds are made available from the Federal Treasury. Two major Federal programs for rural development are administered under the Rural and Industrial Development Authority (R.I.D.A.) which concentrates on improving the quality of home industry products and techniques for marketing them, and the Federal Land Development Authority (F.L.D.A.) which develops new land settlement areas and establishes self-contained communities.

The five year development plan for the period 1961-5 provided approximately M$ 1,000 million, half the total programme of public investment, for various aspects of rural development. (See Table 5.3). These decisions recognised the political urgency of the task of social reconstruction embodied in the rural development programme.

Table 5.3. Expenditure on major elements of rural development (M$ Thousand).

	Original Plan target	1961-63 Expenditure as percentage of Plan target
Rural health centres	39,390	62
Rural Roads	163,773	72
Rubber replanting scheme	104,768	75
Rural electrification	15,000	44
Land Development Authority	161,707	35
Rural industries	7,600	62
Minor rural development schemes	12,177	91
Group settlement schemes	29,293	58
Agriculture	28,506	45
Co-operative development	6,839	40
Drainage and Irrigation	120,615	48
Fisheries	7,273	62
Forestry	4,805	35
Veterinary	10,333	62
Total	712,079	57

Source: Malaysia, "Interim Review of Development in Malaya under the Second Five-Year Plan" (Dec. 1963, K.L.) p. 7, Table 2.

The rural development programme launches in 1959 benefited from the lessons learnt in earlier and less comprehensive efforts.(68) The first of

(68) For the sake of brevity no account is given here of the general expansion of health, education and other services in rural areas.

these was the establishment in the 1920's of a government department to organise and foster co-operative societies.(69) Regarded merely as a credit mechanism the village co-operative society should possess a great advantage in its intimate contact with the borrower. His neighbours, as shareholder members, know what the debtor can prudently be allowed to borrow and when he is in a position to repay his loan. They can exert social pressures to secure repayment before he has dissipated the money on something else. But such attitudes presuppose a sense of common interest and loyalty and effective leadership. The co-operative movement is in fact considerably more than a mere credit mechanism. It is a "movement", a way of living, which is not easily learnt. Accordingly the policy of the department was to make progress slowly, to accept the inevitability of setbacks and above all to insist on the principle that co-operative societies must build up their own resources without recourse to government loans. Progress was in fact painfully slow despite the efforts of the dedicated handful of departmental staff. The main effort was directed to promoting "thrift and loan" societies of a simple type. Ventures in co-operative marketing of produce and in retail shopkeeping were failures because they required a good deal of expertise which was rarely available. There were also a few "general purpose" and "better living" co-operatives intended to stimulate common effort on community development lines but these did not attract much support in the inter-war years.

Later, the rural Malay population became impatient and called for more rapid progress with government aid. Accordingly in 1950 the R.I.D.A. was established as a general purpose agency for rural improvement. R.I.D.A.

---

(69) Islamic prejudice against "usury" had delayed the start for a decade.

suffered from a lack of defined functions and priority tasks. Like the proverbial jack of all trades it proved master of none. In time it came to concentrate its efforts on such tasks as government aid to producer marketing schemes, small loans to assist rural industries and various forms of vocational training including village handicrafts. In this role it is a useful ancillary agency but not an instrument of comprehensive reform such as, with wiser leadership at the start, it might have been.

In 1956, the F.L.D.A. was established under the Land Development Ordinance (No. 20 of 1956) "to promote and assist the investigation, formulation and carrying out of projects for the development and settlement in the Federation".(70) This Authority, profiting from the lesson of R.I.D.A., was confined to a single but very important task, i.e. the development of new settlements to relieve the land-hunger of a rapidly increasing population. The long-established land office system was geared to deal with applications for land from individuals. It was a retail system now confronted with a wholesale demand. By 1959 some 200,000 applications for land were outstanding and the land offices were literally years in arrears in their work.(71)

The F.L.D.A. method is to select blocks of 4,000 acres or more of suitable virgin land and to develop them as units for subdivision into 10 acre family holdings, of which eight acres is planted with rubber or other cash crops and the rest is under padi, fruit trees, etc.(72) The new settlers co-operate

---

(70) See Federal Land Development Authority, "Annual Report and Accounts" 1962, p. 42.

(71) During the Emergency, district officers, who were also the land officers of their districts, were required to give priority to support of anti-terrorist operations and to postpone other less urgent duties.

(72) See F.L.D.A. "Report and Accounts" 1962, p. 43.

FIG 36

LOCATION OF F. L. D. A. SETTLEMENTS 1963

(AFTER ROBERT HO).

in the work and are given assistance in money and in kind. When their holdings are productive they are expected to repay by instalments the cost of the help which they have received. The choice of settlers is limited to those with incomes of less than M$ 75 per month and it is expected that each settler should be able to earn at least M$ 300 per month when the scheme is in full operation, based on the assumption that the price of rubber will be approximately 80 cents a pound.(73)

The Authority's aim is to settle "as many families as possible on land development and settlement schemes provided with all major essential services, and to produce at the end of the development period, normally of six years, prosperous farming communities with economically viable farms".(74) By 1965, it is proposed to clear, cultivate and settle several areas totalling 250,000 acres at a cost of M$ 270 million.(75) These areas are expected to accommodate 24,000 families. While by the end of 1963, it had created 50 new settlements for over 40,000 settlers and their families since its inception in 1956. (Fig. 36). Each settlement provides housing as well as a range of social services of better quality than is available to many rural communities in Malaya.

The achievements of the Authority have been distinctly impressive, and no decline in its impetus seems likely as Table 5.4 shows. "Its confidence is demonstrated by recent proposals to develop over 100,000 acres of virgin land in the "Jengka Triangle" of central Pahang, an area larger in size than

---

(73) Ibid. pp. 44-48, also see Second Five Year Plan p. 9 and p. 22.

(74) See F.L.D.A., "Annual Report and Accounts" 1963, p. 42.

(75) See Second Five Year Plan, p. 27.

Table 5.4. Projected increase in F.L.D.A. settlers, 1963-1967.

Year	Proposed Numbers of Settler Families in F.L.D.A. Schemes	Percent Annual Increase	Percent Cumulative Increase over 1963
1963	7,107	-	-
1964	7,810	10	10
1965	11,807	51	66
1966	15,005	27	111
1967	18,472	23	160

Source: Robert Ho, "Land settlement Projects in Malaya: An Assessment of the Role of the Federal Land Development Authority". Table 3.

all its previous schemes put together. In this, as in other affairs, the Authority has demonstrated its ability to surmount constitutional difficulties, and has shown a notable flexibility to cope with changing problems."(76)

For rural development as a whole, the great emphasis is placed on "a self-reliant people responsible for their own welfare". Apart from the official report of F.L.D.A. several other reports tell of mixed government and local enterprise in roads, bridges, schools, adult education (i.e. literacy) classes, in clinics, community halls, mosques, playing fields, water supplies, smallholder rubber "factories", irrigation channels, fertiliser supplies, etc. In fact, F.L.D.A.'s schemes provide only for a minority of rural peoples; the 7,000 - plus settlers they now accommodate must be viewed against the

(76) See Robert Ho, "Land Settlement Projects in Malaya: An Assessment of the Role of the F.L.D.A." (J.T.G., Vol. 20. June 1965) pp. 11-12.

44,000 Malay males reported as unemployed in 1962.(77) It is true, however, that the Authority forms one out of many possible avenues of employment, some of which, especially in urban areas, may well be preferred to F.L.D.A. openings.

Nevertheless, to assess all this merely in terms of economic progress would be to mistake its purpose.(78) It is a campaign for rural betterment in which poverty is only one of the enemies to be vanquished. The others are ill-health, ignorance (and all the consequences of ignorance) and above all apathy. The rural development programme reflects a new order of national priorities which is part of the mood of post-independence Malaya. It is a mood which accords higher priority to economic and social progress than to the individual liberty of the peasant producer.

In addition to the rural development schemes in the Federation, the government of Singapore has also laid out a scheme for the rural development in her Four-Year (1961-64) Development Plan, although it is of minor importance compared with other sectors of investment.(79)

The main objective of Singapore's Development Plan is to expand the resources at the disposal of the Government and other public authorities in such a way that it would contribute to increasing employment opportunities for those who would be entering the labour market each year. Schemes for

---

(77) See Federation of Malaya, Department of Statistics and Department of Labour and Industrial Relations. "Report on Employment, Unemployment and Under-employment, 1962 (K.L. 1963). pp. 9-18, Table 2.8(a).

(78) See A. H. Degani, "The Land Development Authority" (M.E.R., Vol. IX No. 2. Oct. 1964) pp. 75-82.

(79) See State of Singapore "Development Plan 1961-64" p. 35, Table 3.1.

land and agricultural development understandably have minor importance as there is no significant scope for agricultural development in Singapore. Of the total allocation for economic development consisting of M$ 507.95 million, 66.4 per cent is to be expanded on industry and commerce; and 10.5 per cent on land and agricultural development.

Nevertheless, Singapore has a scheme for reclaiming swamp land at an estimated cost of M$ 4 million over the Plan period to increase the acreage available for farming, fishing and prawn culture. Extension work in rural areas was also stepped up with the establishment of more community and veterinary centres.

Summary.

It is generally recognised that between 60 per cent and 90 per cent of the total population of the underdeveloped countries will be found in the rural areas. In Malaya, more than 60 per cent of the total population is classified as rural population, of these, over 80 per cent are Malays. It is estimated that more than 90 per cent of the total rural population is concerned with the production of one or more crops, such as rubber, padi, coconuts and vegetables.

Due to ill-health and malnutrition, ignorance and traditional prejudice, Malay laws of inheritance, landlord and tenancy system, lack of educational facilities, traditional methods of cultivation, bad communication systems and lack of credit facilities etc., the poverty problems are prevailing throughout rural areas of Malaya for more than half of a century. Nowadays, it is still remaining as an acute problem of the economic development.

Generally, agriculture in the underdeveloped countries is characterised by low productivity. This is particularly true of native agriculture.

In order to raise productivity we must not only teach native farmers how to use better seeds, tools and fertilizers as well as better farming techniques, but we must also provide them adequately with the necessary working capital to do so.

It is very common that in the underdeveloped countries the farmers seem to be exploited "every possible which way". The terms of trade are unfavourable to them. This applies to imported goods as well as locally produced goods. In addition, they have to bear heavy rents and other payments charged by powerful landlords, not to mention insecurity of tenure. They also have to pay to unscrupulous money-lenders exorbitant rates of interest on debts that never seem to get settled. The unfavourable terms of trade are made doubly so by the margins that are charged by monopsonistic and monopolistic traders who buy their produce and often sell them their requirements.

In brief, agricultural development means putting an end to the depredations of landlords, moneylenders and monopolistic merchants.

In the process of achieving agricultural development the state may decide to organise or plan whole sections of the economy, e.g. fruit marketing or transport of rural produce on a co-operative basis. Or it may even decide to operate it as a state-managed project. Whatever it is, it is not likely that private enterprise or the capitalistic system is going to be encouraged in that sector where there is an attempt to cure the evils of exploitation of farmers. This may have some psychological impact on the flow of private investment into the development of other industries. Therefore an assurance

may be necessary that non-exploitative private investment in industry will be welcome.

In considering the inter-relationship between agriculture and other industries in the achievement of economic development we must realise that agriculture is the major occupation in the country and except for a few cottage industries and possibly some light industries, the other industries are practically non-existent.

The economic development of agriculture cannot be separated from agrarian reform and from revolutionary changes in such institutions as the market, credit, and state aid to the peasantry. Although agrarian reform is one of the thorniest and most difficult problems of all, it is one of the most important. The objective to be achieved is the elimination of the causes of neglect and inefficiency, which as we have seen include divided ownership of small lots, tenancy and share-cropping, absentee ownership, fragmentation, and farms that are too small. But piecemeal changes and "show-piece" projects are not likely to make any significant impact.(80) The role of capitalists in agriculture must undergo a complete change.

At the same time, there is scope for the entrepreneur to function within the planned development of other industries. Such capitalists should function in a different way and on a different basis from the present capitalists in agriculture.

The allocation of resources for development between agriculture and other industries must be determined by technical considerations and by the phasing and priorities of a national development plan. Planners should bear in mind not only the principle of economy (i.e. that all resources are scarce and have

---

(80) Including landlords, moneylenders, merchants and speculators.

alternative uses), but also that through time economic activities can have cumulative results due to the principle of circular causation.

Chapter VI.

Some aspects of industrialization

The importance of Malaya's "export economy" tends to mask the fact that nearly eight per cent of the working population is employed in manufacturing industry. (Table 6.1).

Table 6.1. Percentage of economically active population engaged in manufacturing industry in selected countries

Country	Year	Percentage
W.Germany	1961	37.1
U.S.A.	1960	26.5
Japan	1960	21.9
India	1961	10.6
Philippines	1960	9.8
Malaya	1957	7.6
Indonesia	1961	5.4
Thailand	1960	3.4

* For Malaya, it is 11.7 per cent, if the figures for building and construction are also included. Of these, 9.7 per cent in the Federation and 19.5 per cent in Singapore. The International Bank Mission (1955) has pointed out that by Asian standards, one-tenth is a high proportion.

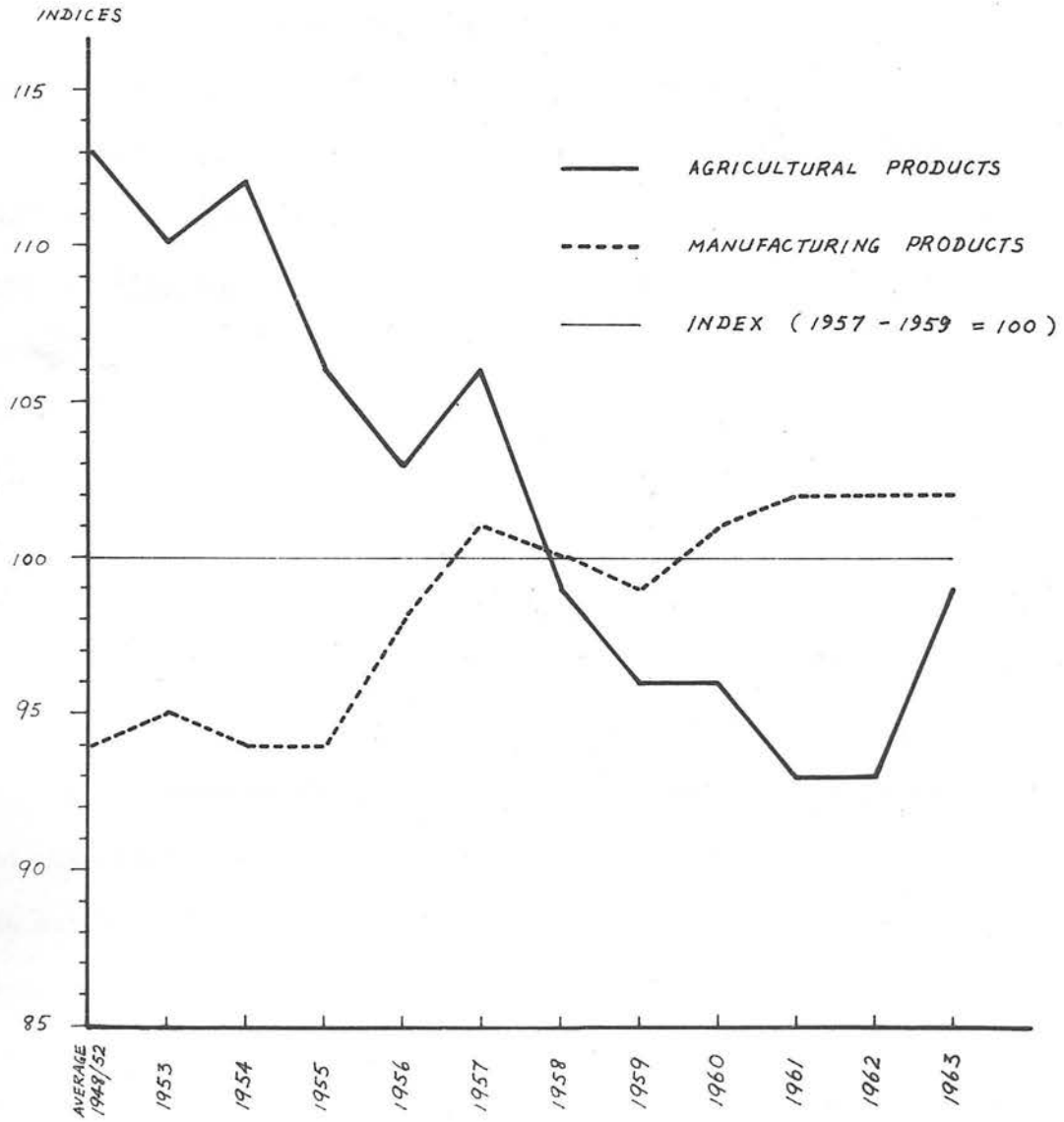
Source: United Nations, "Demographic Yearbook, 1964".

The old-established industries are mainly based on the processing of produce for export[1] and the production of perishable or bulky consumer goods (and local services)[2] which can hardly be imported. Malay cottage industries are hardly significant.

(1) A 1960 census of manufacturing in the Federation showed that 64 per cent (by value) of sales and 31 per cent of employment in manufacturing was concentrated in five industries - rubber milling, concentration of rubber latex, coconut oil mills, rice mills, and timber sawmills.

(2) Ice factories, bakeries, manufacture of bottled drinks and iron-founding (for tin mines) are cases in point. The railways and ports have their own engineering shops.

FIG 37
AVERAGE EXPORT UNIT VALUE OF WORLD+ TRADE



+ EXCLUDING EXPORTS OF CHINA

BASED ON FAO, 'THE STATE OF FOOD AND AGRICULTURE' 1965. PAGE 35 TABLE

Malaya nonetheless remains a large importer of manufactured goods which she pays for by the export of raw materials. In recent years the price ratio between manufactural and agricultural products has moved against the latter. (Fig. 37). It would be better therefore to employ a proportion of the rapidly increasing labour force (Fig. 32) in making consumer goods to reduce the import bill rather than expand still further the export of raw materials for sale in unfavourable and uncertain world commodity markets.

In this chapter, however, it is not the intention to discuss the industrialization process in detail, but some important geographical and economic aspects.

Need for Industrialization.

In general, industrial development of the underdeveloped countries has become one of the great world crusades of our times. It is a campaign in which the advanced countries compete with each other to meet the rising claims of the non-industrial countries for help in becoming industrialised. It is an effort on which the underdeveloped countries place a major hope of finding a solution to their problems of poverty, insecurity, and over-population and ending their newly realized backwardness in the modern world.(3)

The underdeveloped countries have long been mainly producers of raw materials, and they have observed that there is a strong and positive connection between the wealth and standard of living of a country and the extent of its industrialization. They also see that, as prices for raw materials fluctuate much more than prices for manufactured goods, an economy which is dependent on the export of one or a few basic commodities suffers from instability of the national income more than economies which are industrialised and more self-sufficient. Observing these facts, the people of the underdeveloped countries have naturally come

---

(3) See M. D. Bryce, "Industrial Development" (London 1960). p. 3.

to believe that, in order to achieve greater security, stability, and a higher standard of living, their countries must become industrialised.

Myrdal has pointed out that manufacturing industry represents, in a sense, a higher stage of production. In advanced countries the development of manufacturing industry has been concomitant with these countries' spectacular economic progress and rise in levels of living; many of its products are indeed almost symbolic of a high living standard. Not least in the underdeveloped countries, the productivity of manpower in industry tends to be considerably greater than in the traditional agricultural pursuits.

"Industrialization, and the growth of that part of the working population that is engaged in industry, is therefore a means of raising national income per capita. In countries like India and Japan, with a high ratio of population to natural resources and, in particular, to land, manufacturing industry represents virtually the only hope of greatly increasing labour productivity and raising levels of living, however much is done to improve agriculture. But even in countries where the population pressure is lower - as for example, in many Latin American countries - the successful exploitation of a more favourable relation between population and natural resources requires mostly the growth of manufacturing industry."(4)

Most economists are agreed on the urgent need for industrialization in the underdeveloped countries. In Malaya, industrial development is considered vital for four main reasons. In the first place, it is hoped that it will prove the easiest path to the achievement of a rapid rate of growth in national

---

(4) See G. Myrdal, "An International Economy". (Harper & Brothers, New York, 1956). p. 226. See also A. B. Mountjoy, "Industrialization and underdeveloped countries". (London: 1963). pp. 65-138.

income in the near future. Secondly, it is seen as a means of increasing the stability of the economy by making it better balanced, that is, not so heavily dependent upon agriculture. Thirdly, industrial employment opportunities are needed to absorb some part of the rapidly growing labour force. Lastly, it is recognised that the setting up of new industries inevitably involves in the long run the creation of more skills and technological experience within the working population and that this in itself should eventually lead to increase in productivity and to a more flexible economy.

With regard to the industrialization, not only the western European countries and the United States, but also Japan, are the most appropriate model for Malaya as well as the other underdeveloped countries. Even the crudest of statistics[5] indicate the great gap in development that Japan has succeeded in opening up between herself and the countries of south-east Asia within the last hundred years. The gross national income per head of population in Japan was estimated in 1962 to be U.S.$ 504, whereas in Singapore it was U.S.$ 361, in the Federation of Malaya, U.S.$ 241, in Thailand U.S.$ 93, in Indonesia U.S.$ 69, and in Burma U.S.$ 52. Japan's success in industrialization is shown by the fact that manufacturing contributed more than 30 per cent to the total gross national income compared with less than 15 per cent in South-east Asia countries.

The factories that have been established so far in South-east Asia, usually in the shelter of tariff barriers or protected from competing imports by quota systems or currency restrictions, are mostly concerned with the manufacture of

---

(5) It must be admitted that many of the statistics relating to Malaya and the South-east Asia as a whole are crude because of the lack as yet of comprehensive statistical services.

consumer goods. Typically, as much as two-thirds of the value added to raw materials by industrial processing in the area is in consumer goods industries, especially in food products, textiles, clothing, footwear, wood products, leather, rubber products, printing and publishing. In Japan, in contrast, the proportion is only one-third, and this is typical of more industrialised nations.

Specialization in consumer goods which can be produced by relatively simple processes is a sign of industrial immaturity, and the years to come will have to see some expansion in the manufacture of capital goods and in service industries in the countries of South-east Asia if their industrial plans are to be successful. This is important because once the domestic demand for particular consumer goods is satisfied, difficulties of marketing on a wider scale quickly arise as, for example, Hong Kong has found recently in cotton textiles.

In any case, industrial development is a major and complicated task involving careful assessment of technological and economic factors and close attention to the scale of finance available and the rate of progress that is practicable. Its success depends on systematic and realistic planning aimed at drawing up a detailed programme of development that is co-ordinated and integrated with developments in other sectors of the economy, and carefully phased over a period of years. It depends on the adoption by the Government of policies and measures which overcome obstacles to the effective implementation of the programme.

It should also be pointed out that in Malaya, industrialisation is essential if the two territories are to cope effectively with the problem of raising living standards and increasing employment opportunities for the rapidly growing

population. But it must be emphasised that industrialisation is complementary to the development of agriculture and trade.

In the Federation the success of industrial development depends primarily on progress in the agricultural sector. This is so because improvements in agricultural productivity and the efficiency of marketing organisation will increase the purchasing power of farmers and other members of the rural population and thus will strengthen the market for industrial products. Moreover, it will stimulate the growth of industries by providing a source of cheap food and raw materials for industrial production.

In Singapore, the agricultural sector is relatively less important than the entrepot trade sector. So, it has to be emphasised the interrelationship of industry and trade in Singapore, although they are complementary in their developments to one another.

Owing to the larger population and land area in the Federation, the advantages and potentialities for industrialisation appear to be greater than in Singapore. But the relatively high average income and the greater concentration of population in a small area in Singapore as well as in some parts of the Federation have stimulated the growth of industries. These industries are small-scale or medium-sized manufacturing consumer goods, or engineering industries associated with transport and communications. In addition, there has developed a wide range of processing industries which are closely associated with the entrepot trade activities.

These industries have developed in the private sector as a result of private initiative, enterprise and capital. There is still scope for the growth and expansion of such small-scale and medium-sized industries in the

private sector. The reason for this is to be found in Malaya's substantial assets of enterprise, skill and industrial experience. In addition there are advantages arising from the existence of facilities and economies associated with the location of established industries. It would be wise to continue to encourage the expansion and growth of industries in the private sector of Malaya's economy.

It is in this field of private industrial enterprise that the Government has an important role to play. It can speed up the private industrial development by active encouragement and assistance. The scope of Government action in this respect is quite wide and includes the provision of adequate basic services such as electric power, water supplies, transport and communications. It includes assistance through the provision of technological and market research services, of training programmes, of facilities for financing sound industrial projects and of official services and acquiring sites for factories.

Utilities.

There are some industries which are at present operated by the Government, but these are mainly in the category of public utilities. In fact, this had already begun under the First Five-Year Plan 1956-60, under which the government spent M$ 142.0 million on electricity supply, M$ 80.6 million on water supply, and M$ 16.0 million on sewerage, totalling M$ 238.6 million on utilities. It is not possible to attribute any specific portion of this to industrial use, nor any specific portion of the M$ 206.5 million spent on transport, or the M$ 151.6 million spent on communications during the First Five-Year Plan. Nevertheless, the expansion of these services must have made a significant contribution to industrial potential.

Past trends and studies of prospective power needs in the Federation indicate that the peak demands of power users, other than the tin industry, will about double between 1960 and 1967. Total annual power requirements including that of the tin industry is expected to rise by almost 46 per cent between 1960 and 1967.

Thus, the Second Five-Year Plan envisaged much larger expenditures for the period 1961-5. (Table 6.2). The large increases in public investment

Table 6.2. Expenditure for public utilities

($ million). 1961-5.

Transport		Utilities		Communications	
Roads & bridges	190.0	Electricity	254.0	Telecommunications	50.0
Railways	65.0	Water	140.0	Broadcasting	5.0
Posts	55.0	Sewerage	8.0	Ports	17.9
Civil Aviation	52.0				
Total	362.0	Total	402.0	Total	72.9

Source: Second Five-Year Plan 1961-5.

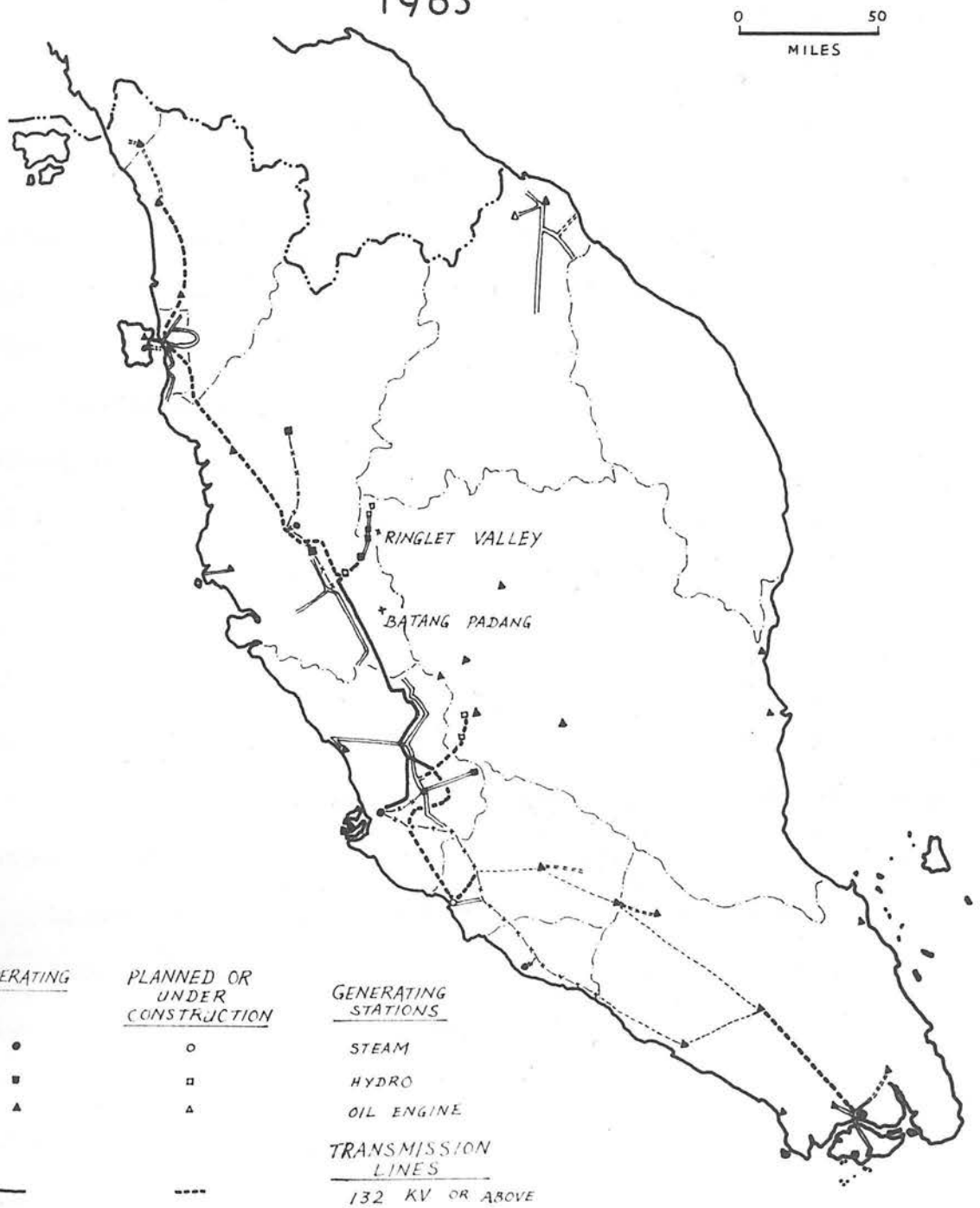
in both electricity and water supply envisage a rapid growth in demand - in the case of electricity, a 30 per cent increase in consumption of power was envisaged by 1965."*

The bulk of the additional power requirements is to be met under the expansion programme of the Central Electricity Board (C.E.B.). The largest installation of the C.E.B. is the Cameron Highlands Hydro-electric project. The first stage of this project was completed in 1963. The dam and reservoir are situated in the Ringlet Valley (Fig. 38). This will add 106 MW (6) of

(6) MW = Megawatts.

* See E. L. Wheelwright, 'Industrialisation in Malaysia'. (1965).

FIG 38
POWER STATIONS AND TRANSMISSION LINES 1963



DATA BASED ON THE FIFTEENTH ANNUAL REPORT, 1964, CENTRAL ELECTRICITY BOARD OF THE FEDERATION.

additional generating capacity. Total expenditures on Cameron Highlands and related projects during 1961-65 are estimated at M$ 132 million.

Following the completion of the first stage of the Cameron Highlands Hydro-Electric Scheme, the second and the lower stage of development known as the Batang Padang-Electric project is now progressing in the Batang Padang Valley. (Fig. 38). This project, estimated to cost M$ 147 million, will have an ultimate installed generating capacity of 154.2 MW with an average output of approximately 530 million units per year and is planned for completion in early 1968.

Other additional generating capacity to be constructed by the C.E.B. during 1961-65 include completion of a Thermal power station of 30 MW at Johore Bahru and of a piston engine power unit of 6 MW at Butterworth, installation of a new thermal plant at Butterworth of 30 MW (to be ready for operation in 1966), and additions of smaller diesel generating units in various consumption centres as required. Estimated costs of these generation projects, to be spent during 1961-65, amount to M$ 25 million at Johore, about M$ 25 million for the piston and Thermal units at Butterworth and about M$ 4 million for the diesel installations.

In addition to the Cameron Highlands Project and related installations and the addition to thermal and diesel generating capacity, the C.E.B. programme also provides for about M$ 9 million of expenditure during 1961-65 on transmission lines and for M$ 53 million for improvement and extension of power distribution systems within the C.E.B. network. Part of the latter will be spent on the extension of electricity into the rural areas. (Fig. 38).

Outside the C.E.B. network, the power programme includes expansion of power capacity by the George Town City Council to meet electricity requirements

on Penang Island. Provision of M$ 4 million is made for this in the Plan. There may also be some further addition to the power capacity of the Federation from private sources. With all this development, however, the Federation's power supply situation is hardly likely to be an easy one in the 1960's. The power requirement of the tin industry (which now represents over half of the total power consumed) may rise only slightly.

But consumption for domestic, commercial, industrial and other purposes has almost doubled in the last five years and there seems little reason to (7) expect that the rate of increase will be substantially less in the next several years. Hence the proposed power programme is no more than the minimum required to keep pace with the development of the economy and with the increasing domestic use of electricity.

While in Singapore, electric power is supplied from two thermal stations at Pasir Panjang and St. James, at present, there is a total installed capacity of almost 230 MW. Work on a new power station in Pasir Panjang is well under way. This station will have two 60 MW units which are expected to be commissioned during early 1965, followed by another two 60 MW units in 1966.

The total output of the impounding reservoirs and water works of the Public Utilities Board in Singapore is 75 million gallons per day at present, with a total storage capacity estimated at 5,900 million gallons. To meet the continually growing demand for water, expansion schemes are being implemented to utilise the flow of the Scudai River and the Johore River in South Malaya from which Singapore draws most of its water supplies. The additional off-take when these schemes are completed will be 250 million gallons per day.

---

(7) From 1956 to 1960. See also, the "Second Five-Year Plan". Federation of Malaya.

With the completion of these projects there would be adequate supplies for both domestic and industrial use.

In addition, plans are now being made for both short-term and long-term industrial water requirements in the Jurong Industrial Estate. Water is being impounded in the Jurong River adjacent to the Jurong Industrial Estate, and work has started on a scheme to utilise the sewage effluent from the nearby Ulu Pandan Sewage Works. (Fig. 40).

Transport facilities.

Apart from the utilities, the Government must also devote its attention to the improvement and extension of services and environmental facilities, particularly to the field of transport facilities which are of fundamental importance and are required for industrial growth as well as the expansion of national economy.

Prof. Ginsburg has pointed out that "accessibility is a major factor in the developmental equation. Elements in the resource endowment need to be accessible in order to be used productively. Interaction among people, and therefore the dissemination of ideas and the sharing of knowledge and skills, requires a high physical mobility of people. More important, perhaps, the size of market in a given country and the degree to which its resources, both natural and otherwise, can be mobilized, is reflected in the size and quality of its transportation system."(8)

The building of railways is an essential factor in establishing the accessibility of the producing areas. "The cocoa production in the Gold Coast (Ghana), for example, which was greatly stimulated by the building of the

---

(8) See N. Ginsburg, "Atlas of economic development". (Chicago: 1961) p. 60.

railway from Accra to Kumasi."[9] At the same time, the pushing through of a new road greatly increases the relative advantage of those who understand market structure, so that it is desirable to co-ordinate community development and rural extension work with transport development. On the other hand, the improvement and extension of air services and port facilities are of equal importance for industrial growth and export.

As regards the road system, not only in the ports of Singapore and Penang, but throughout the Federation, is of a very high standard. The railways, though not so good as the roads in comparison with the rest of Asia, still reach a high standard of efficiency and of ton-kilometres per head of the population.[10] (Table 6.3).

Table 6.3. Intensity of road and railway use* in selected countries.

Country	Road Value (Unit/Person)	Railway value (net ton-kilometres/person)
France	21.0	108.0
U.K.	16.7	68.2
W. Germany	14.2	116.0
Japan	4.3	47.1
Malaya	3.6	5.4
Ceylon	1.1	2.9
Philippines	0.7	0.7
Thailand	0.6	3.8
Burma	0.2	3.3
Indonesia	0.2	1.3
Pakistan	0.1	7.1

* These figures provide a measure of the extent to which the roads and the railways serve people and contribute to the national economy.

Source: Data based on U.N., "Demographic Yearbook" 1964, for the road value, while for railway, figures compiled from N. Ginsburg, "Atlas of Economic Development" (1961). p. 68.

(9) See P. T. Bauer & B. S. Yamey, "The economics of underdeveloped countries". (1957). pp. 48-51.

(10) See United Nations, Economic Commission for Asia and the Far East, "Annual Survey", 1956. p. 182.

Malaya is also well linked with the world by ocean going vessels and aircraft, and Singapore is one of the main points of call in Asia. In addition, the Federation will soon have a new international airport in Kuala Lumpur, and will benefit from recently enlarged deep water port facilities at Port Swettenham. The Federation is also served by excellent harbour facilities in Penang which will in due course be extended to the mainland by the construction of deep water port facilities in Butterworth.

The railway system owned and operated by the Government is a vital factor in Malaya's transport network, despite the relatively faster growing role of road carriers in the moving of passengers and freight. The railway has undertaken an improvement programme under the Second Five-Year Plan (1961-65).

A main trunk line running from Singapore to Prai (opposite Penang) via Kuala Lumpur and Ipoh, and connecting with the Thai State Railway system, provides a through passage to Bangkok. A branch line to the Malayan east coast leaves the trunk line between Singapore and Kuala Lumpur. (Fig. 16). A regular day and night express service connects Singapore and Kuala Lumpur. A passenger express and freight service is provided between Port Swettenham and Kuala Lumpur, located about 27 miles apart. A freight and passenger service is also provided between Kuala Lumpur and Port Dickson, a resort and industrial area. Branch lines also extend to Telok Anson and Port Weld.

No significant expansion of route mileage is planned by the Malayan Railway under the Second Five-Year Plan. However the Eastern Mining and Metals Company is constructing a 50 mile private railroad to carry the output of the Rompin iron-ore mine to the East Coast. Construction is also proceeding on an important link - the Prai-Butterworth extension - on which the

Malayan Railway will spend M$ 7 million during the Plan. The object of this project is two-fold. First, it will provide a direct rail access to the recently constructed ferry connecting Butterworth to the island of Penang. Secondly, the construction of this link increases the attractiveness of the site for new deepwater berth facilities at Bagan Luar. The rest of the railway investment will be devoted to purchasing coaches and wagons to replace those being retired, commercial development to attract new traffic and improved signalling equipment.

The main system of roads connects the more productive west coast areas with Singapore in the south, and with Penang and Thailand in the north. There are two cross-peninsular highways, one located centrally connecting the west coast system with Kuantan on the east coast, and the other in the south between Batu Pahat and Mersing. (Fig. 17). A roadway now traverses the east coast area, although a portion of it is not yet hard surfaced.

The Plan proposes to raise the level of investment in road transport by about 100 per cent. A total capital expenditure of M$ 190 million will be undertaken compared with an actual outlay of M$ 95 million during 1956-60. Roads are the main form of transportation in the Federation and their traffic bearing capacity must be expanded in line with the overall expansion and aggregate investment in the economy.

It is proposed to spend about M$ 20 million in improving the main West Coast road (Route I). In addition to other works a bridge will be built on the Prai river to serve Butterworth and the new deepwater berths at Bagan Luar. Another large project on this route is the Slim River Deviation which will improve motoring conditions along a particularly bad stretch of the road and

thus eliminate a traffic hazard of long standing. About M$ 22 million will be spent on the major road connecting the West Coast with East Coast (Route II). One of the large schemes is to provide a speedy link between Route I and II through Kuala Lumpur. When completed, this connection will relieve congestion in the capital as well as benefit the long distance traffic. Improvements on the main East Coast (Route III) will involve a substantial capital outlay on a series of bridges which will replace ferries. Not only do these ferries occasionally close down during the monsoon and suspend road communications, they also imply some delay before vehicles can go across the water. About M$ 28 million will be spent on other Federal routes. In particular, the existing gravel road connecting Singapore with the East Coast will be given a bituminous metalled surface. Also bridges will replace ferries on the inland road from Singapore to Kuala Lumpur.

Roads in Singapore are good and well maintained, and a causeway across the Straits of Johore connects the city with the Malayan mainland. Road development in the city areas is directed at widening streets and providing dual highways to serve as rapid outlets from the congested areas of the city to the new industrial and housing estates. In addition, roads are under construction within the new industrial estate of Jurong, connecting it with the city of Singapore and the Malayan mainland.

Convenient access to ocean shipping is vital to Malaya due to its heavy dependence on foreign trade. Singapore's primary economic support is drawn directly from entrepot trade transactions and indirectly from trading services, not the least of which is ocean transportation.

The port of Singapore ranks one of the most important ports in the world, particularly in South-east Asia, and is served by more than 60 international shipping lines. The port is administered by the Port of Singapore Authority. Ample bonded and licensed warehouse space is provided for the storage of dutiable goods. The port is being expanded to provide nine additional deep water berths, four new godowns, fueling and water services, and road and railway access routes by 1965.

Although much of the Federation's foreign trade enters and leaves via Singapore, Port Swettenham, near Kuala Lumpur, accommodates a large part of Malaya's trade and the use of this port will expand further with the opening in 1964 of four new deep water berths. The expanded facilities will enable the port to process an additional 800,000 tons of cargo annually over the former capacity of about 2 million tons.

The free port of Penang is located on Penang Island, which lies a few miles off Butterworth in Northern Malaya, and the bulk of the shipping processed there consists of entrepot trade. However, this port is increasingly important in servicing the import and export requirements of the northern Malaya area. Recognizing the potential of the Penang Port in serving the upper peninsular area, the Federation Government plans to construct deep water port facilities at Butterworth, for which it has obtained a loan from the Federal Republic of Germany.

Other Malayan ports - Telok Anson, Port Dickson, Port Weld, Dungun, and Malacca - are not deep water ports, (Fig. 16) and are used mainly for coastal shipping and by fishing vessels. The port of Dungun is used mainly for off-shore loading of iron ore produced inland and hauled by rail for a distance of about 50 miles.

Transportation by air is important both in Malaya and in providing an increasingly important link with the rest of the world. At present, the main commercial centres of Malaya are connected by regular flights operated by Malayan Airways. The international airports of Singapore and Kuala Lumpur are served by more than a dozen international airline companies with regular and frequent connections to all parts of the world.

Improvement and expansion of transport facilities is one of the most important aspects of industrial development. There should be continued emphasis on it in the future development plan.

Industrialization policy.

The key inducement of industrialization policy in Malaya now is the pioneer industries legislation under which new industries may have tax exemption on their profits for initial periods of up to five years and also, in selected cases, tariff protection against imports. In the Federation a Malayan Industrial Development Finance Company (M.I.D.F.L.) was established in 1960 with an initial capital of M$ 15 million subscribed by the government, banks, insurance companies and the Colonial Development Corporation. It offers long-term or medium-term loans (10-15 years), equity, preference or debenture participation and underwriting, issuing house and advisory facilities. M.I.D.F.L. lends primarily for fixed but also for working capital. It does not seek majority ownership or management control, but must satisfy itself that the project is commercially viable and competently managed. It may resell shares to the public or to existing shareholders on previously agreed terms. It also provides hire-purchase of industrial machinery. Through overseas associates M.I.D.F.L. can furnish investors with "turnkey" projects - plans for fully-established production units; it also investigates for the International Finance

Corporation of the International Bank for Reconstruction and Development, the merits of enterprises seeking capital, and may help to raise part of the capital itself, as a joint-venture.

In Singapore an Economic Development Board (E.D.B.) has been established with a capital of M$ 100 million for much the same purpose.

The first response has been the construction of almost a hundred factories for the final processing or assembly from imported parts and materials of a wide variety of products. The list includes agricultural machinery, cement products, electric batteries, cables, wire, containers, electrical appliances, chemicals, communications equipment, food preparation, paints, pharmaceutical products, plastics, tyres, timber and paper products, cigarettes, etc.

The next phase of industrialisation is likely to include the manufacture of processed materials such as sugar, flour, aluminium, paper and fertilisers.

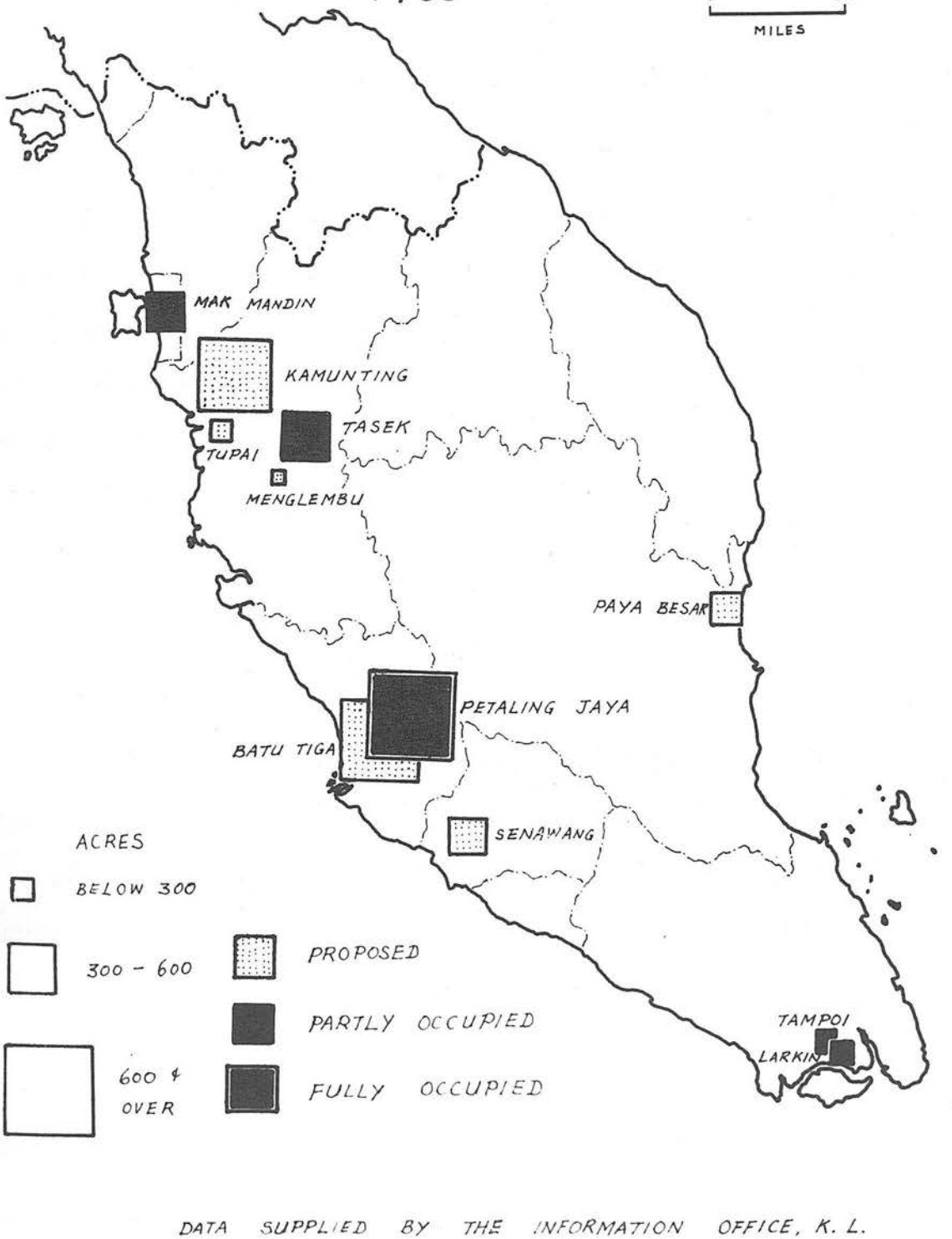
Industrial estates have been laid out to offer convenient sites and other basic facilities for new factories.

Under the Second Five-Year Plan, "a trust fund of M$ 7.5 million established by the Federal Government allows state governments to develop such estates, that is, developed areas with land and utilities made available to manufacturing establishments;"(11) some can offer concessions, such as Ipoh Town Council's reduction in the property tax from 21 per cent to 6 per cent at Tasek Industrial Estate which it is developing for the Perak State government. The title on this recently-opened estate is a 99-year lease of state land.

---

(11) See Malaysia, "Interim Review of Development in Malaya, under the Second Five-Year Plan". 1963. (Kuala Lumpur). p. 46.

FIG 39
INDUSTRIAL ESTATES IN THE FEDERATION
1963



DATA SUPPLIED BY THE INFORMATION OFFICE, K. L.

Among the eleven industrial areas (Fig. 39), proposed by the states of the Federation in recent years, the most successful has been the one at Petaling Jaya (736 acres), which now has released 210 lots to business enterprises and is virtually full.[12] Besides the industrial site of Petaling Jaya, a residential area of more than 3,000 acres has been settled by more than 45,000 people.

Four other industrial areas in the Federation can accommodate new industrial establishments. They are located in Ipoh, Tasek Industrial Estate (370 acres), an inland commercial centre about 140 miles from the nearest seaport; Butterworth, Mak Mandin Industrial Estate (320 acres), on the mainland opposite Penang; and Johore Bahru, Larkin and Tampoi Industrial Areas (154 acres and 143 acres respectively), near Singapore.

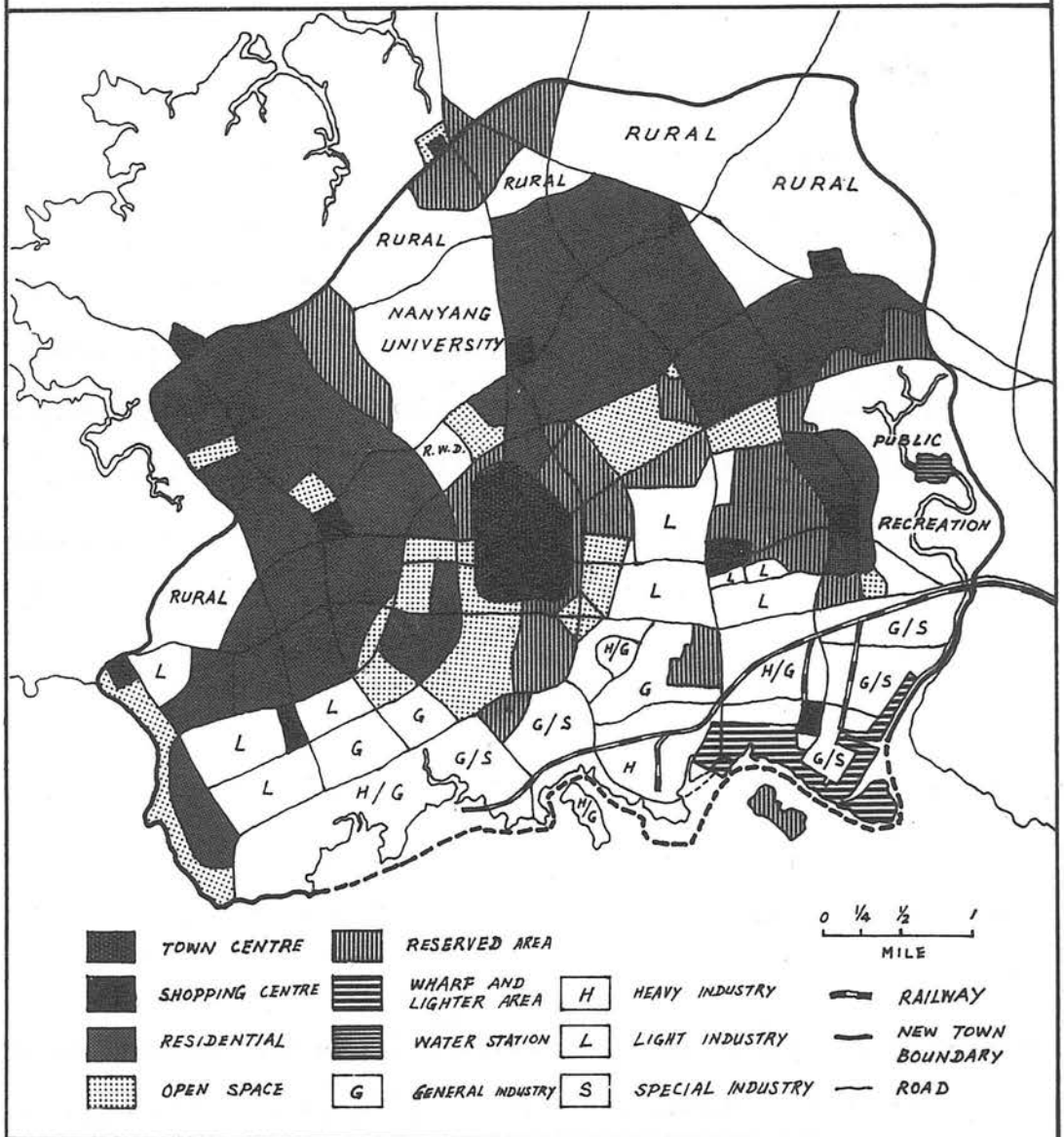
Other industrial areas are expected to be established in Taiping, Kamunting Industrial area (600 acres) and Tupai Industrial area (105 acres); Seremban, Senawang Industrial area (310 acres); Ipoh, Menglembu Industrial area (70 acres); and Batu Tiga (695 acres), between Petaling Jaya and Klang. All these sites are located some distance from seaports, but connected by highway and rail.

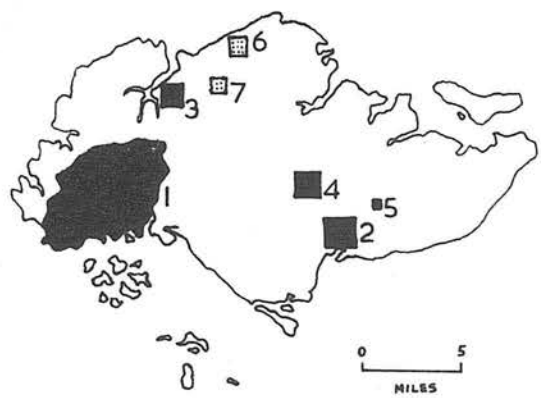
Singapore has launched a 9,000-acre factory site, the Jurong Industrial Estate, located at the South-West of Singapore Island, (Fig. 40) which, when completed, will have all of the necessary public facilities including utilities and water, and in addition will be served both by nearby port facilities now under construction, and by a rail spur and highways connecting the estate with the rest of Singapore and the Federation. Up to the end of 1963, one-

---

(12) Ibid. p. 46.

FIG 40 JURONG INDUSTRIAL ESTATE +





INDUSTRIAL ESTATES 1963

1 JURONG
2 KALLANG
3 KRANJI
4 TOA PAYOH
5 MACPHERSON
6 WOODLANDS
7 MANDAI

PARTLY OCCUPIED

PROPOSED

NOTE : + : SEE APPENDIX X.

SOURCE : ECONOMIC DEVELOPMENT BOARD, SINGAPORE.

third of the land area plotted for factory sites at Jurong was committed for use by pioneer industry certificate holders. A companion factory area known as Tanglin has also been developed, and allocations of 90 per cent of the factory sites there have already been made. Additional industrial areas have also been planned by the government of Singapore, which include Kallang (300 acres), Woodlands (200 acres), Mandai (100 acres), Toa Payoh (100 acres), Sungei Khodus (50 acres), Macpherson (40 acres) and Kranji (250 acres). (Fig. 40).

"The Government plans to transform Singapore from a commercial to an industrial centre would entail the establishing of a ring of industrial estates surrounding the island, and once these projects are completed it has been estimated that 120,000 new jobs would be created in the Government and the statutory boards and in the Commercial sector. Another 80,000 job vacancies would be created in industries in Singapore in the next five years."(13)

So far, the Federation and Singapore have gone ahead with their own plans and organisation for industrial development, with no co-ordination and little liaison. Moreover, they have been competing with one another for private industry.

From the viewpoint of long-term benefits of the area, there must be some joint planning and co-ordination of industrial development. Some central body must take decisions which are agreed to, as to the siting of various kinds of industrial development.

A logical basis already exists for some kind of differentiation between Singapore and the Federation. Heavier type capital goods industries are more suited to Singapore, because of the presence of engineering skills, handling

---

(13) See Straits Times, 26th May, 1965, Singapore.

facilities, and external economies. Lighter industries, and those concerned with food processing and rural product processing are more suited to the Federation.

In the following sections, further discussion will deal with the capital, market and labour problems, as these are the most important factors for the industrial development.

Enterprise and Capital.

Obviously industrial development needs raw materials, workers with the necessary skill and training, and tools or machinery. In most cases it needs also a supply of power and probably water and other public services. But far more important is, someone has to get together the raw materials and the machines, to assemble the workers, to find out what market exists for the product and to take the risk of producing it. These quite essential jobs are the role of enterprise. Someone has to find the money to buy the machinery and the materials, to build or hire premises and pay the workers' wages before any cash is received from sales. That is the role of capital. Neither the enterprise nor the capital need be all private. The State may do the whole job of organizing and financing a new industry, or it may do parts of it, such as the market research or giving technical advice or lending some of the capital required. But in either private or State form, there must be enterprise and there must be capital, if new industries are to be born.

In a wholly underdeveloped country, enterprise and capital may be needed to provide transport, power and other public services, and perhaps even to import and train the necessary labour. In Malaya today, power, water supplies, general transport are available, and there is also a reasonably plentiful supply of workers. Nor is it virgin country so far as industry is concerned.

But the tasks of enterprise and capital are not therefore simple. Careful study is still needed to find out if a particular product can be sold internally or can find an export market. Much organization is needed to get together the right kinds of workers and learn the best methods of production. In all these and many other directions, there is much for management and enterprise to do.

It is not however easy to achieve an expansion of Malayan industry by development of existing enterprises. The European merchant firms and rubber and tin companies could branch out - they have at hand the money and the general management organisation - but most of them prefer to concentrate their resources in the specialised fields with which they are familiar.(14) The Chinese family firms which own the small workshops and factories of existing secondary industry neither employ professional managers and technical staff nor have command of the resources to finance the construction of modern factories of economic size. Moreover such firms are averse to the heavy investment in fixed assets which is the very basis of Western technology.

Neither the Federation nor even the Singapore Government wishes to make State enterprise the spearhead of its industrialisation programme - save in the last resort. Their strategy has been to create conditions and facilities for industrial development in the hope that industrialists, be they foreign or local, will take advantage of them. Thus the individual entrepreneur is left to select the products whose local manufacture promises to be remunerative; he and not the government would have to find qualified management and skilled labour. In particular the overseas manufacturer is most welcome by present government's policies to establish a branch plant in Malaya, and thereby to

---

(14) See J. J. Puthucheary, "Ownership and Control in the Malayan Economy". pp. 60-80.

import capital and "know how" which may take root and spread to local Chinese competitors.

No matter whether local or foreign enterprise, capital supply is nearly always needed, although knowledge, skill, organisation and hard work are vital as well.

Sometimes, perhaps, increased agricultural output for example, may be obtained by the simple application of new knowledge, involving a change of agricultural technique or the substitution of higher yielding varieties of crops; but it is rare for such changes to be possible without any additional capital equipment at all. Improved methods are rarely discovered, still less spread among the mass of cultivators, without the application of some capital by someone, while the cultivation of improved varieties always involves at least some expenditure of capital in substituting, such as a high yielding rubber tree for a low yielding tree. And of course, when it comes to industrial development very large capital equipment is needed. Behind any technologically advanced economy lies too a large background of "social" capital in education and medical facilities and the like.(15)

It is not always realized just how much capital investment is needed for every worker employed in industry. The value of the machinery and equipment in some of Malaya's existing manufacturing industries suggest that an investment of M$ 20,000 to M$ 30,000 may be needed for every employee. In Singapore alone, the working population is increasing by 10,000 a year, and to employ even one-tenth of them in factories would need an investment of M$ 20,000,000 a year or more.

---

(15) See Sydney Caine, "The importance of Capital" (The Malayan Economic Review, Vol. I. No. I. June 1956). pp. 1-5.

However, this is only a broad estimate, in small-scale workshops, less capital may be needed per man employed, but if there is to be a lot of small-scale development there must be a considerable amount of scattered enterprise and ingenuity.

Nevertheless, Malaya has been fortunate in the supply of capital. Not only has much outside capital come in, but productivity and incomes have been comparatively high enough to provide substantial local savings.

Much of the local saving has come from the ploughing-back of profits, whether by large companies or by little private business. But the position is less favourable because of its considerably more equitable distribution of wealth; since the propensity of the rich to save, and invest is much greater, this means that she has a lesser potential for saving and investment. So far as mobilisation of domestic savings is concerned, this might have to be supplemented by involuntary saving through increased taxation to finance the government infra-structure and assist the private industrial sector.

There is considerable wealth in Singapore, and the standard rate of tax at 40 per cent is not high.(16) But difficulties lie in the considerable evasion that already exists and the likelihood of a flight of persons and capital to neighbouring countries, such as the Borneo territories and Hong Kong. A partial approach might be to tax away part of the social increment to land values, since, because of its fixed nature, land values are likely to rise, particularly in Singapore.

However, special and large calls on the supply of local savings are created by the current growth of population, at the unprecedented rate of between 3 and

---

(16) See Chou, K.R. "The Post-war trend of Capital formation in Malaya against the background of South-east Asia". (Ph.D. Thesis, L.S.E., London) 1955.

4 per cent per annum. This rapid growth means that a lot of the local capital has to be put into the provision of houses and schools and roads and all the other needs of a growing population; and the margin left for new industrial investment is small.

So far as external capital comes into the finance of industry, it will almost certainly be private capital, direct financing of industry is not the kind of thing the International Bank or other International Agencies normally assist. And private capital will only come if it can expect security and fair treatment. Furthermore, one of the virtues of private external capital is that if it comes at all, it is likely to bring with it technological skill and managerial experience.

But, on the other hand, as J. J. Puthucheary (17) points out that the Federation has large concentrations of foreign capital in its most productive sectors, the rubber plantations, tin mines and agency houses. Similar concentrations also occur in the larger manufacturing companies. In such circumstances the wisdom of encouraging foreign ownership of a growing industrial sector may well be brought into question. "Direct investment by overseas enterprises may be a quick way to industrialize, but in the longer run is sure to raise the problem of an increasing outflow of profits."

So, according to Puthucheary's work it appears rather absurd to speak of a need for foreign capital, and, as Puthucheary remarks, "the policy of inducements and encouragements to foreign capital is like 'holding open the door of a bird cage in the expectation that more birds will fly in than out'. It is

---

(17) J. J. Puthucheary, "Ownership and control in the Malayan Economy" (Singapore, 1960) pp. 23-122.

difficult to resist the conclusion that there has so far been little need to import foreign capital, that the government would be better occupied in devising measures to reduce the outflow and to channel what it can tap into internal investment, some of which could be devoted to industrialization, given an appropriate framework for its utilization."

"The problem is only partly lack of confidence on the part of investors, it is also what Puthucheary has called 'the heterogeneity of capital'; another way of putting it is that the theory of non-competing groups applies to the flows of investible funds. Thus government funds flow to government investment abroad partly because of inadequate governmental investment opportunities internally, partly because of institutional arrangements such as the Currency Board, and partly because of interest rate differentials. Private funds have gone to private investment or consumption overseas because they accrued largely from traditional investments in rubber, tin and trade, in which further opportunities of investment were relatively restricted, and also partly because there were relatively few opportunities for other kinds of investment - which, in any case, tend not to be acceptable to those in charge of the investible funds."

"The internal capital market is still undeveloped, far from being perfectly competitive, and on the supply side severely weakened by the fact that a very large part of profits, when distributed, flows to overseas shareholders and does not flow back into the Malayan economy."

"What is needed from the point of view of capital for industrial development is a mechanism which will break down the heterogeneity of the various capital flows, prevent some of the funds leaving the country and channel them into various forms of industrial capital. This, of course, is what M.I.D.F.L.

attempts to do, but its resources have been pitifully small in relation to the sums available."[18]

In addition, the government must play an important role in the field of (i) organizing research - chemical research into the uses of local materials, engineering research into methods of production, economic research into the markets and so on; (ii) providing technical advice to small enterprise; some of that advice it may get from outside bodies under the Colombo Plan or from the United Nations: (iii) increasing training facilities at all levels, from the Commercial School to the University; and (iv) creating the right "economic climate" to attract capital and enterprise. This means conditions in which industrialists are helped to acquire sites for their factories, have power, water, transport facilities etc. available, are given fair incentives to make new investment in plant and machinery and above all are given security.

However, in the early stages of industrial development, the financial and organizing measures of government will be inadequate even for building up the infra-structure and social services required. At this stage, industrialization should as a rule be left to private enterprise.

Thus, foreign private investment should be welcomed, provided that it is in the fields of value to the economy. Government, through fiscal and other devices, should encourage foreign firms to re-invest their profits locally and ensure that their royalties and other takings are reasonable. There should be no discrimination between foreign and internal private enterprises, except that foreign firms should be obliged to train nationals and keep expatriate staff to a minimum.

---

(18) Its officially authorised capital was M$ 15 million in 1960; which was increased in August 1962 to M$ 50 million. See also Malaysia, "Interim Review of Development in Malaya under the Second Five-Year Plan" (Kuala Lumpur, 1963), p. 46.; also, E. L. Wheelwright, Op. cit.

Market Problems.

Market is one of the most important factors of limitation of industrial development in most of the underdeveloped countries. In world markets, the competitive advantages are all in favour of developed countries. The prospects of competing in overseas markets in basic manufactures, where the overseas markets themselves are producing the same things, are really pretty remote. We have to accept that in the first instance, most countries will depend largely on domestic markets for industrial development, unless they are processing raw materials for export; and will use a moderate degree of protection, if they are to get industries going at all.

Although there are some exceptions, such as Hong Kong's spectacular successes and the Swiss watch industry, both of which relied on foreign markets from the beginning. But in general, we all saw the comparative disadvantages facing the developing countries' manufactures in world markets - their lack of research and technical know-how, of the needed entrepreneurs and commercial and financial institutions, their high comparative costs.

Possibilities of expanding manufactured exports do nevertheless exist, given enough ingenuity to break out into new export patterns. New styles and types of consumer goods may be developed. High labour costs in developed countries may encourage manufacturers to move capital into developing countries with lower labour costs. By exploiting the very latest technology, developing countries may have a chance of gaining the lead over some developed countries using obsolescent plant and bearing capital losses in replacing it. But the main chance is for developing countries to create protected regional markets in which they can sell their uncompetitive manufactures to each other.

In other words, for most of the underdeveloped countries in the earlier stages of industrialization, manufacturing should be geared mainly to internal, and if possible, regional demand, and to indigenous raw materials. Selling in the home market and using home produced materials, this sort of industry should enjoy competitive advantages; it can be protected by tariffs; and it places least strain on the balance of payments.

Though we stressed manufacturing for the home market at first, we did not thereby exclude planning them from the beginning to export a proportion of their output abroad. What was doubted was the wisdom of developing manufactures which rely mainly on export markets in the early stages of development. The consensus for beginning with processing and import-substituting manufactures mainly for the home market, was a victory for those who stressed the agricultural drive in industrialization.

In considering the market problems in Malaya, it is recognized that both the home and the external markets are too limited to provide the stimulus to rapid development. So far as the home market is concerned, two factors are largely responsible: (i) the smallness of the population and (ii) the low purchasing power of the majority of the population.

Of these two factors the more important is the low purchasing power of the masses. India, for example, has a large population, which means that it has a large potential market. But because of the low per capita income, the actual demand is very much below the potential demand. It must also be remembered that the population is growing rapidly in Malaya. Even if the market is relatively small, the fact that the population is growing rapidly means that the home market will expand in future, provided there is adequate purchasing power. The significant implication of this is that if the

purchasing power of the masses could be appreciably raised, the home market would be enlarged. This is precisely what economic development can achieve, because the increased employment and purchasing power, which is favourable to the expansion of the home market.

However, the problem is much more complex in practice, for there is no guarantee that the increased flow of purchasing power will be distributed between the different components of the increased output in such a way that the increased supply of each product will be matched by a corresponding demand for it. This is because in the real world, the price mechanism does not bring about a rapid and smooth adjustment of market conditions to changes in supply. There is therefore a need for the careful planning of the pattern of economic development so as to produce the types of products that will be absorbed.

The important point, however, is that the size of the home market is inter-dependent with economic progress. Professor Nurkse probably had this in mind when he advocated the enlargement of the home market by the simultaneous expansion of a large number of industries which buy one another's products.[19] The multiplier effect on incomes and purchasing power of such a process of development will also tend to stimulate the demand in other sectors of the economy.

The enlargement of market depends not only on the expansion of purchasing power but also on the development of communications which link up isolated sectors of the economy into larger home markets. Of particular importance is the linking up of the subsistence sectors of under-developed countries with

---

(19) See R. Nurkse, "Problems of Capital Formation in Under-developed Countries", (Oxford, 1953) p. 13.

the more developed urban sectors to ensure the extension of markets into the rural areas.[20] Given the link and the removal of physical barriers, the development of industries in urban sectors will lead to the creation of markets in the rural sectors for the products of industrial sectors.

But it cannot be ignored that the domestic market, even in the event of some economic union between Singapore and the Federation, may not be large enough to provide many factories of optimum size with a year round demand for the products which they produce; while Singapore remains a free port and stands alone, its domestic market will be small indeed, as well as open to the winds of foreign competition. Many of those who set up factories of any size in Singapore, therefore, must be prepared to export part of their production, and the additional expense of distribution and advertising in markets overseas will place them initially at a considerable disadvantage.

Therefore, it will benefit most if a regional economic unit is created between the Federation and Singapore as well as the Borneo territories, or even if it includes some other South-East Asian countries. There are various advantages to be obtained from establishing an arrangement such as a common market.

As the Rueff Report[21] pointed out, "a Common Market would give rise to wider opportunities and prospects for more rapid development." The Report estimated that, using the gross national product as a rough estimate of purchasing power, the total demand within the Malaysian market would be about one and a half[22]

---

(20) See Charles Kindleberger, "International Economics" (Home-wood, Illinois, 1953). p. 382.

(21) I.B.R.D. "Report on the economic aspects of Malaysia" (Kuala Lumpur, 1963).

(22) See Malaysia, including the Federation of Malaya, Singapore, Sarawak and Sabah (North Borneo).

times that existing in the Federation, four times that of the Singapore market, and eleven times that of the Borneo Free Trade Area. The potential protected market available for manufacturers in Singapore and other States in Malaysia, once internal barriers to trade are removed, is almost as large as that of the Philippines with a population of nearly 31 million and probably larger than that of Thailand with a population estimated at 29 million.

In general, the common market promises greater opportunities to local producers of all commodities which are consumed in significant quantities in the area. In the case of agriculture, there are good possibilities for expanded output of a number of products such as vegetables, fruits, sugar cane, maize, fish and livestock products. The expanded marketing possibilities for these crops - especially in Singapore - should ultimately contribute significantly to more rapid growth in this sector.

It is, however, in manufacturing that the greatest potential lies. On the basis of comparisons with other developing countries, it is difficult to avoid the conclusion that a rapid expansion of manufacturing is overdue in Malaya. For example, the Philippines with average per capita incomes half that of Malaya, have developed manufacturing sectors which are significantly larger than that of Malaya. The main reasons for this lag have been the attraction of alternative investment opportunities in rubber, tin and trade, the low import duties of the Federation and the virtual absence of tariffs in Singapore.

In addition, the potential Malayan market has been limited by the tariff walls which exist among the different territories - or which threatened to be erected around Singapore. However, if common market is going to be established in the area, it should make greater use of external tariffs to

encourage a rapid growth in this sector, and thereby to help remove the risks of stagnating incomes and growing unemployment which are raised by the uncertainties affecting the markets for rubber, tin and entrepot services.

Although the prospects for expansion in industry and commercial agriculture are good, it cannot be expected that growth will take place at an identical pace in all the territories. However, as the experience of European economic integration shows, total growth will almost certainly proceed faster in the larger market than it otherwise would; moreover, in all probability the growth rate in each of the territories is likely, in time, to prove faster than it would if each had remained isolated by national tariff barriers. Even when one territory may experience a slower growth rate than the others for a while, it can benefit from the faster overall growth, through transfers of income from the more prosperous territories to the less, and through the increased mobility of manpower which, despite some limitations, should characterize the whole area.

For all these reasons, the creation of a common market would be highly desirable for Malaya, if possible for Malaysia or the South-east Asian countries as a whole.

"The problems of finding and implementing suitable groupings are quite difficult in South-east Asia, where history, culture, geography, and modern experience conspire to divide nations and obstruct communications among their leaders. In this situation one starting point may be a broad and loose grouping - such as a multilateral clearing arrangement to expedite trade among countries with inconvertible currencies, in a framework such as the United Nations. Yet it is useful to look for exceptions where a local situation

might permit economic integration in a smaller, tighter grouping.

In South-east Asia, it would appear that the most economically promising combination is simply the two-nation grouping of Thailand and Malaysia. For some harmonization or at least co-ordination of tariffs, economic plans and policies might be advisable in view of the common land border and rail connections. After all, Bangkok and Singapore are less than 900 miles apart and are connected by rail, road, frequent air services and coastal as well as ocean-going shipping. Southern Thailand and northern Malaya are virtually a geographical unit."*

Politically, it would be difficult to bring the other countries to be the partnership of a region-wide common market which based on Malaysia in the near future. Perhaps, with time, it may be found possible if the situation has changed sufficiently for trade with Indonesia and economic co-ordinated with other South-East Asian countries as a whole.

However, it is equally important that the techniques used to encourage expansion of production for the domestic market should not jeopardize the future of the export sectors or lead to inefficient long-term growth in the domestic sectors.

One of the principal means used by developing countries to encourage industry is through the imposition of protective tariffs. The effectiveness of such tariffs depends on the size of the local market. Tariff protection is of little use in a small, poor country.(23) At the same time, it is important, however, to consider the role of protection in its proper perspective. For

---

(23) See P. Selwyn, "Markets and the location of industry - the regional planning of industry" in (R. Robinson, "Industrialisation in developing countries, Cambridge, 1965) p. 100.

* See D. B. Keesing, 'Thailand and Malaysia : A Case for a Common Market?', (1965).

protection is regarded by many as an essential tool for supporting industrial development in the developing countries of the region, irrespective of considerations of efficiency and costs.

Protection applied selectively and appropriately as a support for industrial development in developing countries can be justified on rational grounds. The problem of development in Malaya, as in other developing countries, is to ensure a sufficient home market for local industries to enable them to establish themselves firmly and produce on an efficient scale. There is no reason why selective protection cannot be applied to promote the development of industries which have the potentiality for growth. Applied in this way, it would be consistent with the theory of comparative advantage in a dynamic setting. The achievement of external economies as a result of industrial development would tend to lower costs and enable local industries in the long run to compete with foreign products without the support of protective tariffs.

The emphasis must be on increasing efficiency and lowering costs. "Protection must be used to foster the growth of industries which have long-run potentiality for growth and for operation as successful units. This point is often forgotten and there is much in current thinking on protective national development that is confused and dangerous".*

Protectionist measures are regarded as devices which could be used indiscriminately to foster the growth of industries regardless of growth potential or of costs. Moreover, there are often difficulties in practice in judging whether particular industries have the potentiality for becoming efficient and for producing at competitive costs. "The advocates of protection who do not see the problem in terms of the consumer public tend to forget one important caution which should be observed in connection with selective protection, that

---

* See Lim Tay Boh, 'Malaysia and the intra-regional trade of Southeast Asia'. (1965).

it cannot help to develop the national economy on a sound basis if individual nations use it indiscriminately to protect a local market which is too small."(24)

However, protective tariffs can be a double-edged sword and, carelessly wielded, may uphold the past against the call of future. If tariff protection is too great on domestic production, it can ultimately become an invitation to economic lethargy. To avoid this, protective tariff policy must be used selectively as an instrument of progress, ready to encourage expansion in those activities which promise to be efficient, but also ready to discourage inefficient activities.

Moreover, in the case of Malaya, it is essential that tariff policies should not be used in a manner which would unduly raise the cost of primary production or disrupt the entrepot trade. For the economy will continue to depend very heavily on these sources of income and employment. Expansion of production for the domestic market must take place, if at all possible, as a net addition to total economic activity, and not merely as a replacement for export income.

Clearly, the creation of a common market and greater economic co-ordination cannot by themselves solve all the economic problems of Malaya. But there is little doubt that they can make a substantial contribution towards this end.

Labour and Management.

Development plans and industrialisation are meaningless unless they provide for those who work within them a reasonable standard of living and working conditions. Nor is it possible to conceive of any long-term development plan being successful unless its purposes and aims are understood by the mass of the

---

(24) See E. L. Wheelwright, "Industrialization in Malaysia" (Australia - Melbourne University Press 1965). pp. 35 - 38; p. 44, pp. 90 - 100, and pp. 123 - 125.

people and their energies and enthusiasm harnessed to it. But while the attainment of acceptable working conditions in industry is a readily acceptable aim, the standard of living that the worker or his leaders may consider acceptable and reasonable may not always be entirely consistent with rapid development, and there may result a conflict between the Government and the wage-earning population that can hamper economic progress.

However, the labour force has an essential role to play in the industrialisation of Malaya. While recognizing the contribution of other factors of production, there is a tendency among some of the developing countries either to minimize the role of labour or to fail to create conditions conducive to the effective contribution of labour towards the economic development of the country.

Industrialisation is an empty phrase without a competent labour force. The active co-operation of labour in the country's gigantic programmes of industrialisation is vital to the achievement of the targets as well as to smoothing the process of industrialisation. That being the case, to underrate the importance of labour or to assign to it a minor role would amount to economic suicide. While stressing the different aspects of industrialisation which include capital formation, entrepreneurship, foreign aid, external trade and stability of the currency, the part expected to be played by labour is equally significant. Once the strategic role of labour is recognized further steps can be taken to make it efficient and effective during the different phases of industrialisation.

In developing countries it is generally the case that skill is scarce, so as in Malaya, shortage of skill is a factor that will retard the pace of

industrialisation. This shortage of skill can be considered in relation to the various categories of skill required for industrial development: (i) shortage of skill in the public sector for the co-ordination, administration and control of development projects; (ii) shortage of entrepreneurial and managerial skill in developing private industries. Such skill is required to undertake the management of risk and uncertainty, to plan development by undertaking research and market and product development, and to co-ordinate and administer production; and (iii) shortage of skilled factory labour which is trained to work under the conditions of factory discipline.

Hence, technical training has to be provided both at home and abroad in order to fit the available manpower into the industrialization programme. (See also Chapter IV). In general, technical education and training is absolutely vital to every kind of economic development; and the educational system must be closely geared up to filling the need for craftsmen, technicians and technologists of all kinds in the required numbers. Further training must also be provided for those already in employment, so that they can be promoted. Businessmen and manufacturers should therefore be much more closely associated with the educational authorities who manage schools and other educational centres throughout the country.

In this connection it ought to be mentioned that "mobility of labour within the states of Malaya is an essential pre-requisite for rapid economic development. Restrictions have been imposed by some of the states on the free movement of labour."(25) It is better to permit the free and unrestricted movement of labour so that it can be efficiently and effectively used for the industrialisation of the nation. By adopting an enlightened attitude, pressures can

---

(25) See C. V. Devan Nair, "Labour and an economy in Transition". (The Malaysian economy in Transition 1965). p. 38.

be relieved in those areas where there is a high incidence of unemployment. Further, the states which might have to make adjustments in their development programmes on account of labour scarcity would benefit. Of course, racial, regional or other local prejudices have to be overcome before an agreement can be reached to permit the work-force to move freely within the national boundaries.

The legitimate interests of labour have to be protected in order to ensure labour co-operation. The example of many developing countries shows that during the early stages of industrialisation, when the fortunes of labour are left to the free play of market forces, exploitation of cheap labour usually takes place creating a disgruntled and dissatisfied labour force. Thus it is the responsibility of the state to enact legislation to protect the legitimate interests of the working class.

In Singapore, "special interest has been taken by the Government in safeguarding the interests of the workers. The Industrial Relations Ordinance of 1960, which brought in arbitration for the first time in the history of Singapore,"(26) was a positive step towards the creation of greater amity between labour and management on the basis of justice. Even though there might be some discontent or disapproval from the labour or the management side with regard to the impact of an arbitration award, the system has definitely been conducive to the industrialisation of the State. Unfortunately, the labour laws in the Federation have not developed as favourably. It is necessary to introduce and maintain uniform labour legislation throughout Malaya to safeguard the rights of labour so that the Governments concerned as well as employers can obtain the co-operation of labour organizations in increasing

---

(26) C. V. Devan Nair, Op. Cit. p. 39.

productivity. Further, without uniform labour legislation and an assurance that labour will not be exploited for the benefit of one section of the population, free mobility of labour within Malaya cannot be achieved.

In most developing countries, the recruitment and utilization of the labour force during the early phase of industrialization can pose serious problems which may undermine the large interests of the nation. In these countries, since labour has to be drawn from the agricultural sector, commitment to the factories with the discipline and control associated with them, is extremely difficult. It takes time for labour to adjust to the conditions of industrial employment. Under such circumstances labour-management relations depend to a great extent on the social structure, the skills required as well as the pace of industrialization.

On the part of management the absence of qualified managerial personnel frequently poses a threat to smooth industrialisation.(27) In the early phases of industrialization, when labour has to be moulded and adapted to urban factory conditions, and when trade unions are in their infancy, there is a necessity for progressive policies in industrial relations, suitable social security measures and well qualified managerial staff to provide the right atmosphere for the creation of healthy employer-employee relations.

The problems which have been presented above are not so prominent in Singapore. The existence of a relatively well organized and sophisticated trade union movement, which appreciates its rights and its duties, have made the process of industrialization comparatively easier.

---

(27) See L.G.J. Wong, (ed.) "Papers Presented at the Symposium on the Role of Management in Industrialisation in Malaysia", in M.E.R. April, 1963. pp. 1-29.

In the first place, the labour force for industrialization is drawn essentially from the tertiary sector and not from the agricultural sector. Hence the question of the adaptation of the labour force to new working conditions does not arise in Singapore. Secondly, trade unionism is not a new phenomenon in Singapore. There is an increasing awareness on the part of trade union leaders and of the rank and file of labour's responsibilities and strategic role in industrialization. There is no reason why the trade unions in the Federation should not adopt an attitude provided that they are assured of fair progressive labour legislation to safeguard the larger interests of the working class. However, management should approach this problem in an enlightened manner and work towards establishing employer-employee relations in industry on a healthy basis.

Furthermore, it is important in striving towards greater industrialization to study the experiences of more advanced nations and to recognize those factors which contributed to their growth and those which may have retarded economic development. Such a study will show that the basic common denominator of economic growth is education. It is not possible to single out an advanced nation without a highly integrated system of education, whether among small countries such as Switzerland and Denmark, or among larger countries such as West Germany, the United States and Japan.

Compared to most other countries, Malaya allocates a relatively large proportion of its resources to education. But to meet the needs of industrialisation there must also be a re-allocation of emphasis.

Management education infiltrated into the academic sanctum of universities in North America just before the turn of the present century and into European universities during the past twenty years. But it is only in

recent years that management education at university level was seriously considered in the United Kingdom.

Following the Robbins Report (1963),[28] the Franks Report made specific proposals to implement the recommendations on management education. In essence, Manchester University and London University were selected to begin on an expanded scale programmes in management education under the financial sponsorship of government and industry.

In this respect, one measure of the success of the project in Malaya, is the fact that both universities in the two territories are making plans to consolidate and expand the course and programmes which have been established. At the University of Singapore this is to be accomplished by the creation of a separate Department of Accounting and Business Administration. At the University of Malaya a board of studies is exploring the feasibility of establishing Accounting and Business Administration as a main unit in a new school of Economics and Commerce. A further measure of success is the increasing number of enquiries from employers in Malaya regarding the employment of graduates from the Business Administration stream of courses at the two Universities.

---

(28) The Robbins Report, in recommending that "at least two major postgraduate schools should be built up, in addition to other developments already probable in universities and other institutions", stated two conditions for these postgraduate schools to prosper: "First they should each be associated with a well established institution - a university or a Special Institution for Scientific and Technological Education and Research, ... Association with an existing institution is preferable to beginning from scratch outside the present confines of higher education. An adequate background of expert knowledge in all the different disciplines that must be involved can only be provided in this way.

"Secondly, ... it is important that these schools should be situated in the neighbourhood of large business centres. Continuous contact is best maintained through close proximity, and such educational enterprises can only be properly staffed if they have resources to a good deal of part-time assistance. ...".

"In studying the need for management education, one should appreciate the social forces which give rise to this discipline, namely, the demand for the skill and knowledge needed to manage an industrial undertaking as well as the services of specialists.*" Obviously, the Business Administration graduates who are required in market research, sales promotion, personnel administration and financial management. The greater significance lies not in the technical competence of the university graduates but in their broader perspective and better insight into human affairs.

In the industrialisation process, the main aims of policy are the raising of levels of productivity and the improvement of industrial efficiency. Before we look at Malaya, it might be worth while looking briefly at the general question of productivity in developing countries. A considerable amount of serious research has been undertaken in Africa.(29) Of these, a number of factors adversely affecting the productivity of the individual worker were identified, of which nutrition and the absence of an industrial background were the most important. But it was the firm view of a number of experienced industrialists with establishments in Africa that the factors most affecting productivity were precisely those which are encountered in the industrialised countries, i.e., worker-employer relationships; the quality of training and supervision; effective organisation of workshops; and physical factors such as ventilation, lighting and heat control, etc. Good management and effective training combined with good labour relations have been demonstrated as more important to productivity than the natural disadvantages under which the worker labours in a developing country.

---

(29) See G. Foggon, "Labour Problems in Developing Countries" in (R. Robinson, "Industrialisation in developing countries.) pp. 153-161.

* See L.G.J. Wong, 'The Role of Management Education in Industrialisation.' (1965).

The need for increased productivity is just as much the concern of the individual enterprise as of the nation as a whole, if not even more so. For the overall productivity of a national economy is dependent on the productivities of individual enterprises.

No industry can prosper without increasing its productivity continuously year by year. Big or small, new or old, all factories have to plan their operations and future activities by making constant efforts to ensure their competitiveness and attain a high rate of yearly increase in productivity.

The importance of high productivity is especially evident for an industrializing country like Malaya. Many of the industrial products made in the country will have to be sold in world markets in competition with goods made by highly industrialized countries. The world markets have only one criterion of judgment; quality and price. No other consideration counts. And good quality of production with a low price, while affording adequate margins of profit, may only be obtained when productivity is high. Successful competition today in industry is based on the best technical know-how and the highest productivity in order to produce the best quality goods at the lowest price.

Nevertheless, the responsibility for raising productivity is not a simple one. The reason is that higher productivity calls for concerted efforts on the parts of all groups engaged directly or indirectly in industry. In other words, it is the responsibility for increasing productivity in common to all sectors of the enterprise management, engineers, foremen and workers. It is also the responsibility of organisations outside the enterprise - management associations, trade unions, economic board, government etc. which must create conditions favourable to an increase in productivity.

Summary.

"In Malaya, industry itself may be considered to have been actively promoted only from about the beginning of the 1960's. While there have been considerable interest and discussion on the development of industry such as those contained in the World Bank Report of 1954, the Federation Industrial Development Working Party Report of 1957 and the Singapore 1959 Lyle Report,(30) these comprise mainly expressed intentions or recommendations of future government policy. The more important manifestations of government policy lie in the institutions which are created to implement such policy and in the allocations to them of funds and resources. The instruments for implementation did not become properly established or effective until the 1960's."

"The industries which were already established before the present decade, with little or no assistance from the government, were mainly those for which there was natural protection, for example, the processing industries associated with local primary production and trade, industries sheltered by high transport costs because of weight, such as bricks, or because of bulk, such as wooden furniture, and service industries such as repairs and maintenance."

A characteristic of geographical distribution of existing industries in Malaya is the heavy concentration in a few States, i.e. Singapore, Selangor, Perak, Johore and Penang, those are all situated in the comparatively more developed area of western coast of Malaya. Not only transport and communication services are more advanced than the east coast, but also they are those States

---

(30) The Economic Development of Malaya, Report of a Mission organised by the International Bank for Reconstruction and Development, 1954, The Johns Hopkins Press, 1955; Federal Industrial Development Working Party Report (1957), Kuala Lumpur; Government Printer, 1957; An Industrial Development Programme (F. J. Lyle), Singapore Legislative Assembly Sessional Paper No. Cmd. 5 of 1959, Singapore: Government Printing Office, 1959.

being the most highly urbanized. Further, most of the industries are located in the big cities. In Selangor for example, most of it being concentrated in and around Kuala Lumpur. Others like George Town in Penang, Ipoh in Perak and Johore Bahru in Johore.

"In the period about the beginning of the 1960's, the diversification and deepening of industries began to be deliberately promoted. The Federation Second Five-Year Plan expressed this opinion: "For the future the importance of manufacturing in the Federation's long-run development and economic diversification can hardly be over-emphasized". The Singapore 1961-64 Development Plan assigned to industrialization an important role - that of providing the solution to the problem of residual unemployment, that is, unemployment remaining after account had been taken of the additional jobs which might be provided over the Plan period in the public sector, in building and construction, as well as from normal growth of the economy".*

In fact, the creation of employment opportunities at the present stage, if they are to be adequate to absorb the growing labour force, must take place in all sectors of the economy, in agriculture and trade as well as in industry.(31) If it is confined only to industry, it is likely to fail because it will not be self-generating. Unless there is also a positive and vigorous programme of developing external trade and agriculture, industrial development will not be able to sustain itself, much less generate a process of rapid economic expansion.

But, with time, the relative role and contribution of agriculture to the G.D.P. should decline, as processing industry, manufacturing industry related to the needs of the agricultural sector, and also to the demands of the

---

(31) See R. Robinson, "Industrialisation in developing countries". (Cambridge, 1965). pp. 1-3. See also Bauer & Yamey, "The Economics of underdeveloped countries" (London: 1957). pp. 235-257.

* See Hon Sui Sen, 'Singapore industrial development.' (1965).

agricultural sector, and secondary industry more generally grows at a faster rate than agriculture grows. With time too, more people will also be employed in manufacturing industry. With the growth of an internal market for the output of manufacturing industry, the base may be established for a more extensive manufacturing industry, looking toward the export of manufactures and the expansion of the industrial sector into more technologically complicated and more basic heavy industry.

However, the advocates of industrialization have had ample opportunity of proclaiming its economic, social, and political advantages. The purchasing power of the population depends on a fairly small number of agricultural products exported in a raw or half-raw state. The prices of the products vary a great deal, whilst those of imported manufactures - whose cost is added to by the expense of carriage over a long distance - oscillate within far narrower limits. The rise of local industries would give more stability to the life of the people and would be a source of wellbeing.

The concentration of population in certain districts creates very favourable conditions for this development owing to the plentiful supply of cheap labour. Though the output of the Malayan worker is lower than that of the European workman, it can be raised by judicious training. Furthermore, industrial development will be one of the most effective remedies for the evils due to overpopulation, which are not adequately countered by improvements in agriculture or emigration.

The political advantages would be no less evident. The budgets and social equilibrium of distant countries would be less affected by crises due to overproduction and a fall in world prices. Not only would the new industries

meet local demands to a great extent, but they would also certainly enable profit to be made from exports to other countries.

So far as the capital for industrial development is concerned, "Malaya must now depend on domestic savings to finance private investment to a degree in marked contrast to the traditional pattern of substantial inflows of new private foreign capital; the latter are now of reduced significance. Existing foreign investment remains of major importance to the Malayan economy; so does local re-investment of earnings from this source. It is most important to maintain an investment climate which will induce foreign capital to remain in Malaya and to re-invest its earnings there and which will attract new foreign investment. But for various reasons including constitutional development in Malaya and political uncertainties in South-East Asia generally, Malaya is not likely for some time at least, to be able to count, as in the past, on a large inflow of new private capital from abroad: dependence on domestic savings to provide capital for the private sector of the economy will undoubtedly be much greater than used to be necessary."(32)

Under these circumstances certain forms of government assistance and inducements to secondary industries recommended by the Working Party require comment. Among these, the recommendation of special reliefs from income tax in the form of granting "tax holidays" or other forms of relief for "pioneer industries" may be construed as a discrimination against existing industrial undertakings and tends to discourage expansion and modernization of existing industries which is so essential in the present Malayan industrial structure. Generous

---

(32) See International Bank Mission, "Report on the Economic Development of Malaya," (1955) p. 20.

initial and depreciation allowances for capital expenditure would be more effective in encouraging industrial development than any attempt to distinguish "new" and "old" industries, as "new Malayan industries should mostly grow out of the wide range of existing enterprises".(33)

Furthermore, it should bring about co-ordination among the different states of Malaya to avoid a waste of scarce resources or duplication of effort. When a particular industry is assured of only a limited market in Malaya and states without prior consultation choose to establish the same type of industry, the products are unlikely to find a stable domestic market. To avoid this situation there should be a proper understanding of the problem and greater co-operation among the different states as well as the Central Government, so that their approach towards economic development would be a more realistic one. Thus, if every venture is geared towards national prosperity and the Central and State governments co-operate on an understanding that no discrimination would be practised against any state, one of the essential pre-requisites for the industrialisation of the country would be fulfilled.

The establishment of a common market is one example of co-ordination, which would gradually eliminate and harmonize internal tariffs and establish a common tariff or external tariff system applicable to the import of foreign goods would further accelerate the pace of industrialization. The Jurong industrial complex for example, can only be a success with the assurance of the common market since Singapore's economic development is so closely related to the Federation as a whole.

---

(33) Ibid. p. 315.

Generally, in most of the newly independent countries, the emphasis on economic development has resulted in the greater participation of the Government in economic affairs. This is shown by the fact that in all these countries there has been a rapid expansion in the public sectors of their economies since independence.

This trend of an expanding public sector in the economies of countries emerging from colonial rule is regarded as inevitable by most economists, because of the need to speed up the process of economic development and to correct the lack of balance in these economies, due to the unplanned development which took place in the past under the colonial regime.

In the circumstances in which Malaya finds itself today, there is no choice between wanting a slower or a faster rate of development. The Governments of both the Federation and Singapore will have to push on as fast as possible. In Malaya as in other countries of South-East Asia, the Government rather than the drive of private enterprise in the pursuit of profits, will determine the major features of rural and industrial development.

The role of the Government is especially important in the following respects:

(1) Many of the modern development projects require investments which are much wider in scope than would attract private enterprise. Investment covering a wide scope is necessary, because of the need to exploit to the full the technical possibilities of modern production. Hence it is necessary for Government to undertake such investment.

(2) Government has a very important part to play in developing the basic services, such as electrical power, transport, roads, and irrigation works. They are essential in providing an environment favourable to rapid development.

Such basic services are already well developed in advanced countries, where they tend to increase the momentum of economic progress. In the less developed countries, the absence of such basic services tends to slow down the development process. One of the initial tasks of a Government interested in promoting economic development must, therefore, be to increase the range of basic services available.

(3) Government participation is essential in ensuring the balanced growth of the economy. In drawing up a development programme, Government must balance the claims of the rural against those of the industrial sector of the economy. For this purpose, it is necessary for Government to initiate a survey of the needs and resources in the various sectors of the economy and to draw up an integrated programme of development.

(4) Government can, by including a scheme of social services in its plan of economic development, ensure that the increased national income resulting from economic progress is more equally distributed among the different social classes, and that any ill-effects from economic development are corrected by social legislation. We know from the experience of Western and Asian countries that development through free enterprise does not necessarily ensure that the share of the national product received by the different social classes will be determined in accordance with the principle of social justice. Poverty and unsatisfactory labour conditions are often the by-products of economic development under a system of free enterprise. Such conditions have to be counteracted by the introduction of social measures. Government, therefore, has an important role to play in ensuring that a programme of economic development is complemented by a scheme of social services, because unless this is done,

economic development will only have the result of concentrating the wealth from production in the richer classes without raising the living standards of the masses of the people who have relatively low incomes.

(5) The successful implementation of any programme of economic and social development will depend on how the problems arising out of the shortages of capital, foreign exchange and trained personnel are tackled. Government is in the best position to take measures to remedy these shortages or to adjust the rate of development to the conditions imposed by them.

Chapter VII.

Economic stabilization and diversification

The characteristics of the Malayan economy are similar to those of other countries that specialize in the production of one or two commodities for export. Rubber and tin are the two major exports of Malaya. But to some extent, entrepot trade also plays an important role in the Malayan economy as a whole.

Nevertheless, rubber is the most important product in Malaya. The entire domestic output is exported and has accounted in recent years for more than 50 per cent of the value of total exports. About 2 million people or nearly 30 per cent of the total population are directly dependent on rubber while in recent years about 11 per cent of public revenues were derived from duties levied on the export of rubber. Of the total cultivated area in Malaya of about 6 million acres, the acreage under rubber is about 4 million acres, and is perhaps an excellent example of a plantation industry operable by large concerns and smallholders alike. In fact, the 4 million acres are almost equally divided between these two categories of cultivator.

Besides rubber, there are two other important crops, rice and coconuts. Together they use less than a quarter of the total area under cultivation. Both rice and coconuts are smallholder's crops. Rice is grown by Malay peasants mainly for their own use, while coconuts are grown mostly on smallholdings, though a quarter of the copra production does come from estates.

The other crops are relatively unimportant, judged by the acreages under cultivation. They are oil palm, pineapple, coffee and tea as we have mentioned in Chapter III. All of them are commercial crops, and with the exception of

oil palm, which is entirely an estate crop, they are grown partly on estates and partly on smallholdings.

A striking characteristic of agriculture in Malaya is the sharp contrast between the subsistence farming of the peasants and the production of commercial crops on the plantations. In subsistence farming, the technique of cultivation is traditional, and in consequence the yield is relatively low. Since production is a family affair and peasant households are relatively large, while land holdings are small, the ratio of people to the acreage under cultivation tends to be high. The result is that the peasant population tends to be underemployed, that is, the peasants are not employed as fully as they could be. Thus besides the low yield due to the use of traditional techniques of cultivation, there is a relatively high ratio of people per acre of cultivated land.

On the other hand, production on the plantations is organised on a commercial basis, using modern techniques and geared to a world market.

Instability of natural rubber price.

In general, too great a dependence upon one crop means a corresponding sensitivity to the prices for that crop, and where, as amongst the large proportion of the rubber planters of Malaya, the proceeds from the sale of the crop are the main means whereby imported food can be purchased for everyday living, this specialization can lead to serious consequences during periods of low prices. Producing for the raw materials market is always a speculative venture, but the peasant cannot afford to gamble with his food supply. In seeking the advantages of specialization, he has also to cope with its attendant liabilities. That these prices can oscillate enormously is illustrated in Fig. 12. Between the price of 7 cents per lb. of rubber as obtained

in the Malayan market in 1932, and the 169 cents per lb. in 1951 is a difference of 2,400 per cent. The prices as shown in Fig. 12 represent the annual average only, the degree of fluctuation for monthly prices would be even greater. The standard of living of the Malayan rubber planter, as represented by the prices he received for his crop, has thus varied from the margin of subsistence between 1930 and 1940 to the height of affluence during the 1951-52 rubber boom, when he could afford to buy such luxury goods as wireless sets, sewing machines, motor cars, and all manner of other expensive articles. But it is doubtful if there has been a real increase in peasant living standards, even during the boom, because of inflation and because much of the money realized was quickly used in a spate of extravagant spending.

The fluctuation of rubber prices, not only affect the rubber planters, but the country as a whole. For example, a drop of one cent a pound would mean a loss of M$ 16 million in export earnings and M$ 2 million in revenue. As a result of the fall in rubber price since 1961, the Government is reported to have lost about M$ 378 million in export earnings and revenues.(1)

In some important ways the years ahead are likely to be much more difficult than those of the recent past. A leading factor is the absolute and relative decline in rubber's contribution to the economy. Rubber has played a major part in bringing to Malaya the development, growth and prosperity we have known in the past. But in future, it is difficult to make such an important contribution as in the past. During the rest of the 1960's, while other parts of the economy are expanding, rubber will probably yield fewer income each year than in 1960, despite rising output. The reason for the declining income from rubber is simply the progressive drop in rubber prices. It has

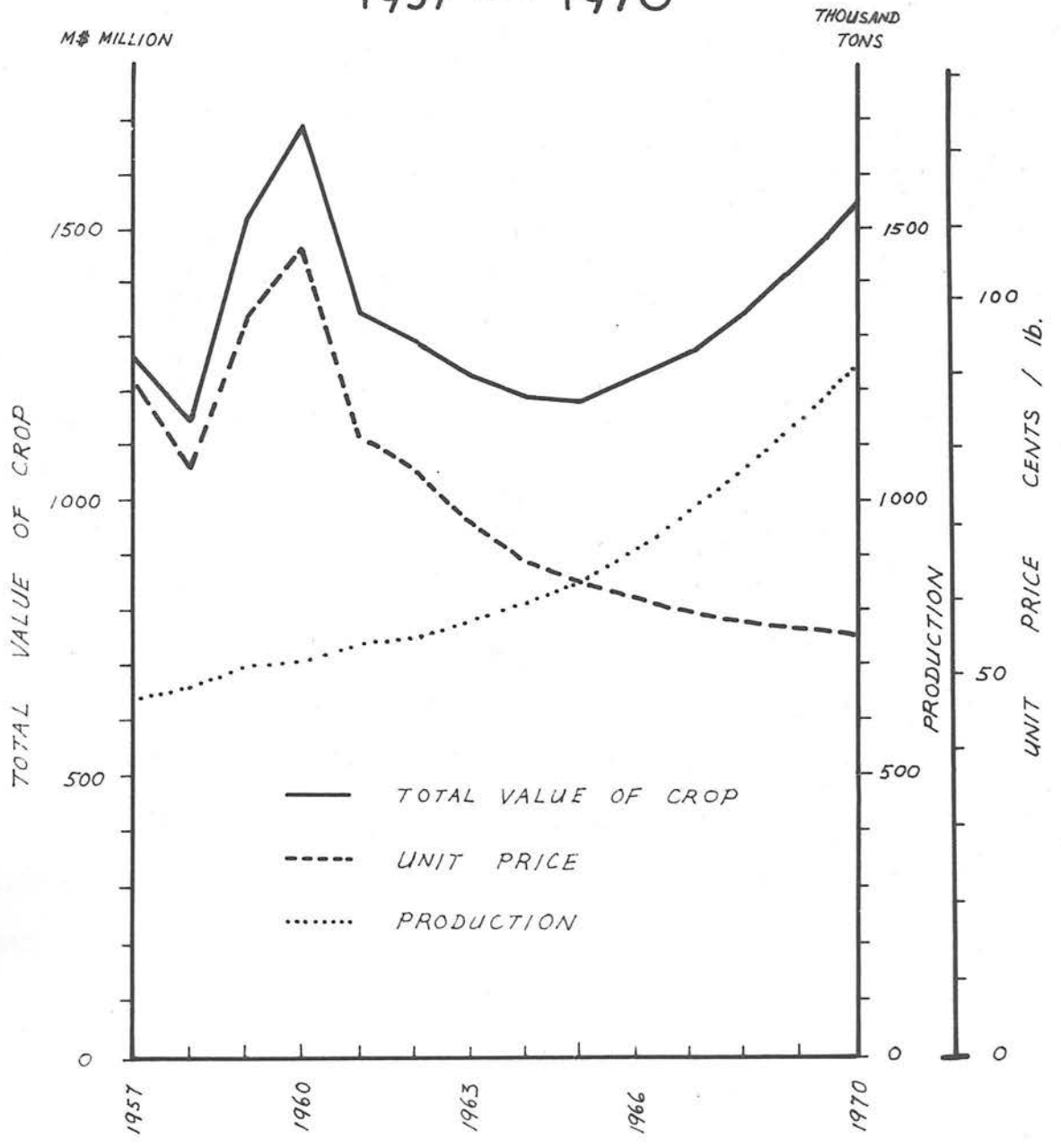
---

(1) See "The Straits Budget", (August 14, 1963).

FIG 41

MALAYAN RUBBER TRENDS

1957 — 1970



BASED ON FIGURES SUPPLIED BY THE DEPT. OF STATISTICS, K.L.

been pointed out by the Department of Statistics that the prospect of rubber prices will continue to drop and be steadier than in the past, reaching a point by 1970 where prices are expected to be hardly more than half what they were in the recent peak year of 1960. (Fig. 41).

In 1957, the year when the Federation became independent, smoked sheet (RSS 1) sold for an average of 89 cents a pound in Singapore. This price dropped in 1958, rose to a peak of M$ 1.08 in 1960, and then started the long decline that is expected to continue throughout the present decade, reaching about 55 cents in 1970. During the fourteen-year period covered in Fig. 41, the most valuable year's rubber production was that of 1960 - 708 thousand tons valued at M$ 1,691 million. Despite the impressive increases in production that are expected as a result of the continuing programme of replanting with high-yielding strains, the total value of Malaya's rubber is not expected to reach the 1960 level during the whole decade, 1961-1970. The 1970 crop is expected to be worth about the same as that of 1959, although almost twice as large in output.

The problem of price instability is one over which the planters have little control, for the price levels are determined by the interplay of international market forces, and are tied in with the general economic as well as political conditions of the world.(2)

A Government memorandum(3) analyses the whole position regarding market price variation and sets out a number of factors both short term and long term, which affect the price of natural rubber.

---

(2) See K. P. Ang, Op. cit. p. 26.

(3) See P. F. Adams, "Memorandum on the fluctuation in the price of natural rubber" (1958. See also, "Planters' Bulletin" No. 39. Nov. 1958, p.19.

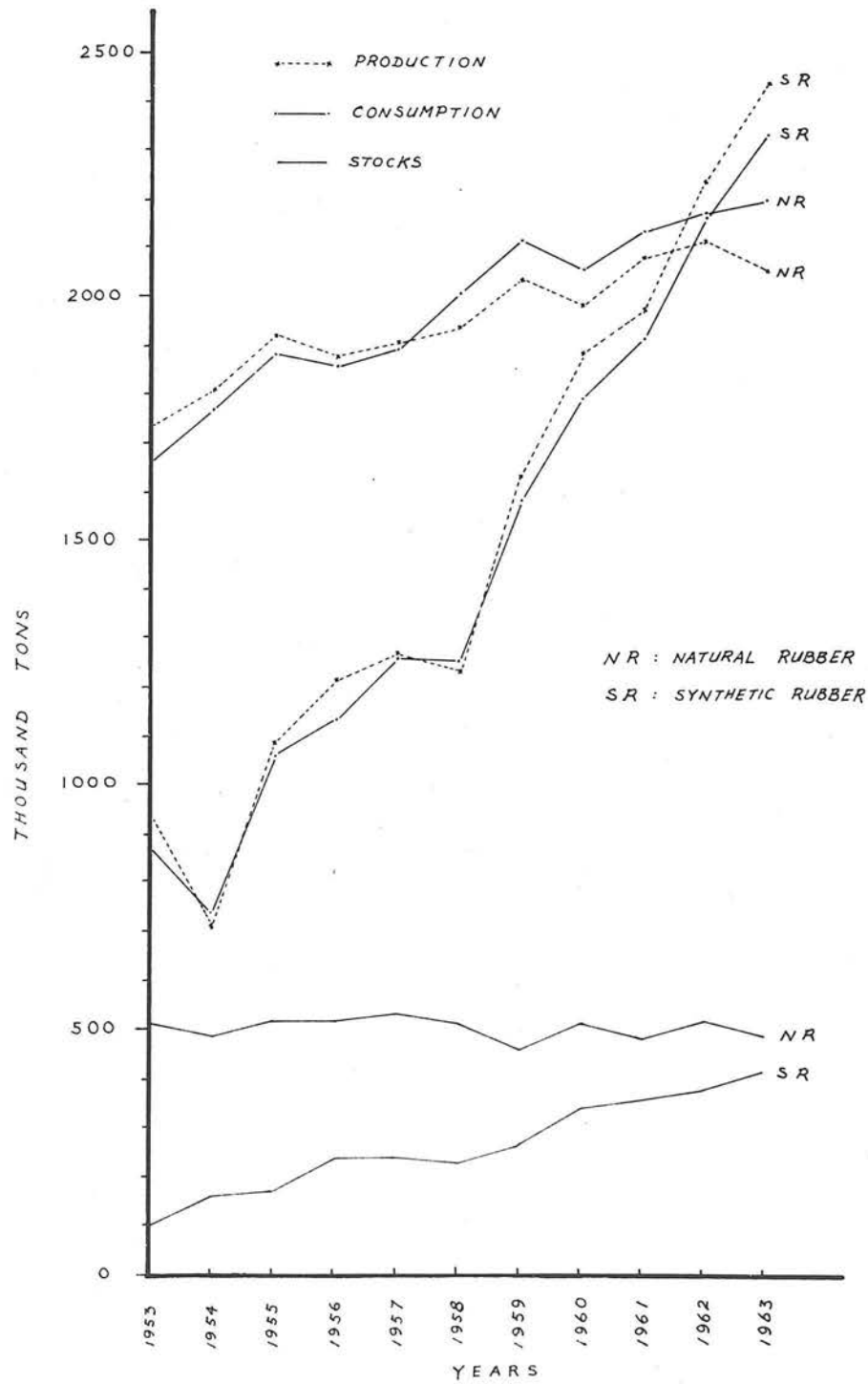
Short term factors include irregularities in the amount of rubber produced and exported, and in the quantities held in stock by consumer countries. Another is consumer buying policy. It is estimated that four American companies[4] purchase nearly 70 per cent of the natural rubber entering the United States and, with their subsidiary and related companies, probably account for 40 per cent of that sold throughout the world. Similarly in the United Kingdom, one large company (Dunlop Rubber Company) is concerned with 50 per cent of the rubber consumed in the United Kingdom. Thus the buying policies of only a few major corporations must have considerable effect on the price of natural rubber, particularly should any appreciable error arise in their estimation of factory requirements, thus causing sudden changes in the normal buying procedure.

Other factors considered are market operations and strategic stock piling, but the examination of measures which might be taken to reduce price fluctuations has not produced any positive solutions. Although much talk and discussion has been going on about price stabilization for primary commodities in Malaya as in most underdeveloped countries, so far, the problem of stabilization for natural rubber prices remains unsolved. The conclusions reached are that price stabilization should only be attempted if a level higher than that for synthetic rubber is required, and to do so would require a buffer pool and restriction of export, neither of which is desirable in the long term interests of natural rubber producers.

---

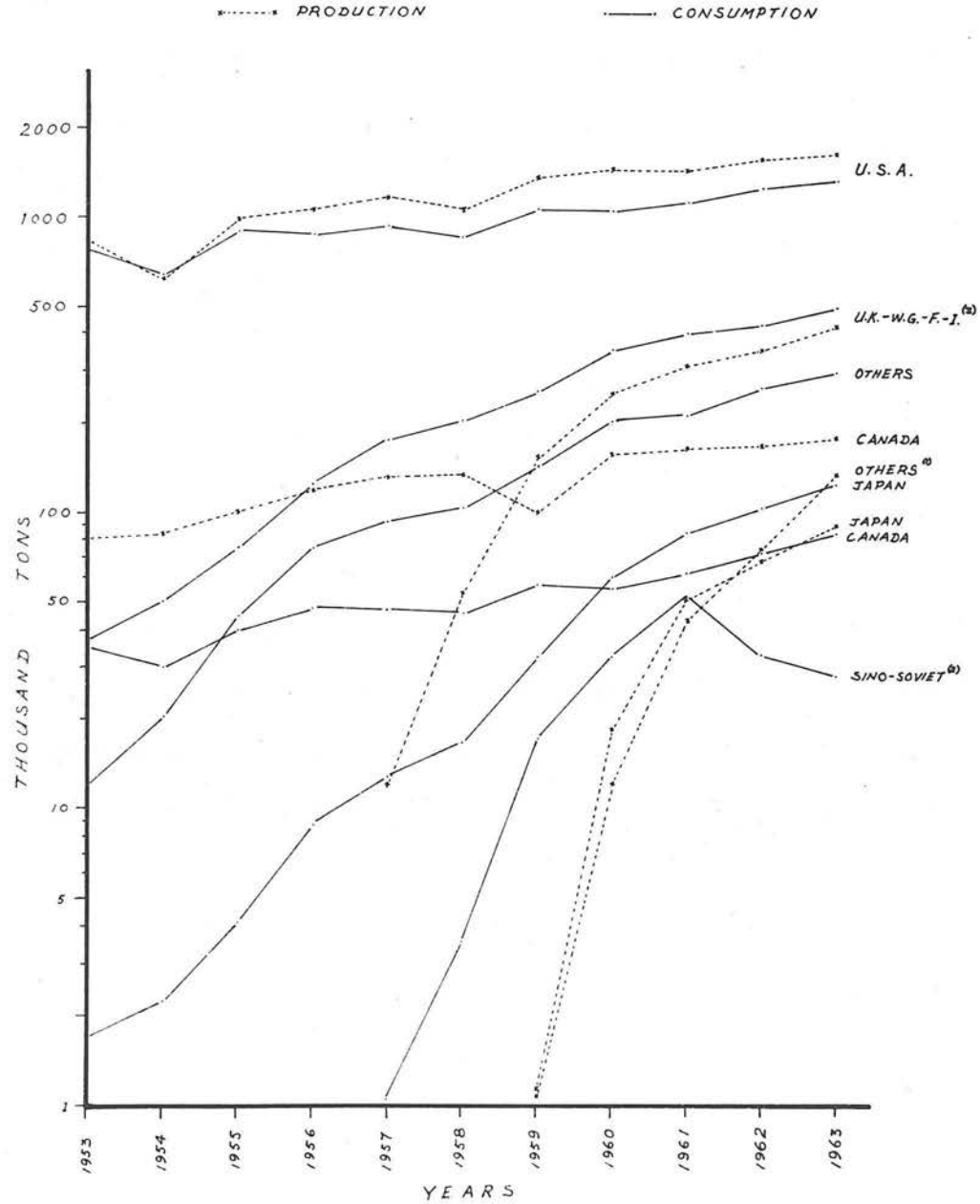
(4) The four main American Rubber Companies are: Goodyear, Goodrich, Firestone, and United States Rubber.

FIG 42
WORLD POSITION OF NATURAL AND SYNTHETIC RUBBER
1953 — 1963



SOURCE : DATA BASED ON FIGURES IN RUBBER STATISTICAL BULLETIN Vol. 18, No. 10, JULY 1964 AND Vol. 19, No. 10 JULY 1965.

FIG 43
PRODUCTION AND CONSUMPTION OF SYNTHETIC RUBBER
1953 — 1963



NOTE : (1) Including Netherland, Australia, Brazil, and India.
(2) Including Bulgaria, Czechoslovakia, German Democratic Republic, Hungary, Poland, Romania U.S.S.R., and China.
(3) Including U.K., West Germany, France, and Italy.

SOURCE : DATA BASED ON FIGURES IN RUBBER STATISTICAL BULLETIN Vol. 18, NO. 10, JULY 1964 TABLE 22 and TABLE 26.

The development of synthetic rubber and other natural rubber producers.

The rubber planters of Malaya, as well as the natural rubber producers in other parts of the world, are now faced with serious competition from the synthetic products.

Synthetic rubber was first produced in significant quantities in 1939, when total world production was 102,000 tons, most of which was produced in Germany.(5) The production expanded considerably during the Second World War. The Japanese conquest of South-East Asia deprived the Allies of most of their natural rubber, and forced them to manufacture the synthetic product on a large scale in order to continue the war effort. The total production increased to 850,000 tons in 1945, due to a great expansion in the United States during the war and the new producer of Canada commenced her production in 1943. After the war, when natural rubber was again available, the production of synthetic declined, until in 1949, it was only 440,000 tons. In 1951, at the beginning of the Korean War, production leapt to over 900,000 tons, and although it experienced a slight decline in the mid-1950's, it has since risen steadily. (Fig. 42).

During the last few years, several other countries entered the ranks of synthetic rubber producers - U.K. (1957), Italy (1958), France (1959), Netherlands (1959), Japan (1960), Australia (1961), Brazil (1962) and India (1963) - (Fig. 43). Since 1962 the total production of synthetic rubber has outstripped that of natural rubber, it amounted to 2,240,000 tons as compared with the total output of 2,105,000 tons of natural rubber. (Fig. 42). The fact that the production of natural rubber between 1939 and 1962 was only about double, but synthetic rubber production showed an increase of 1,800 per

---

(5) See "Rubber Statistical Bulletin",1950 & 1953.

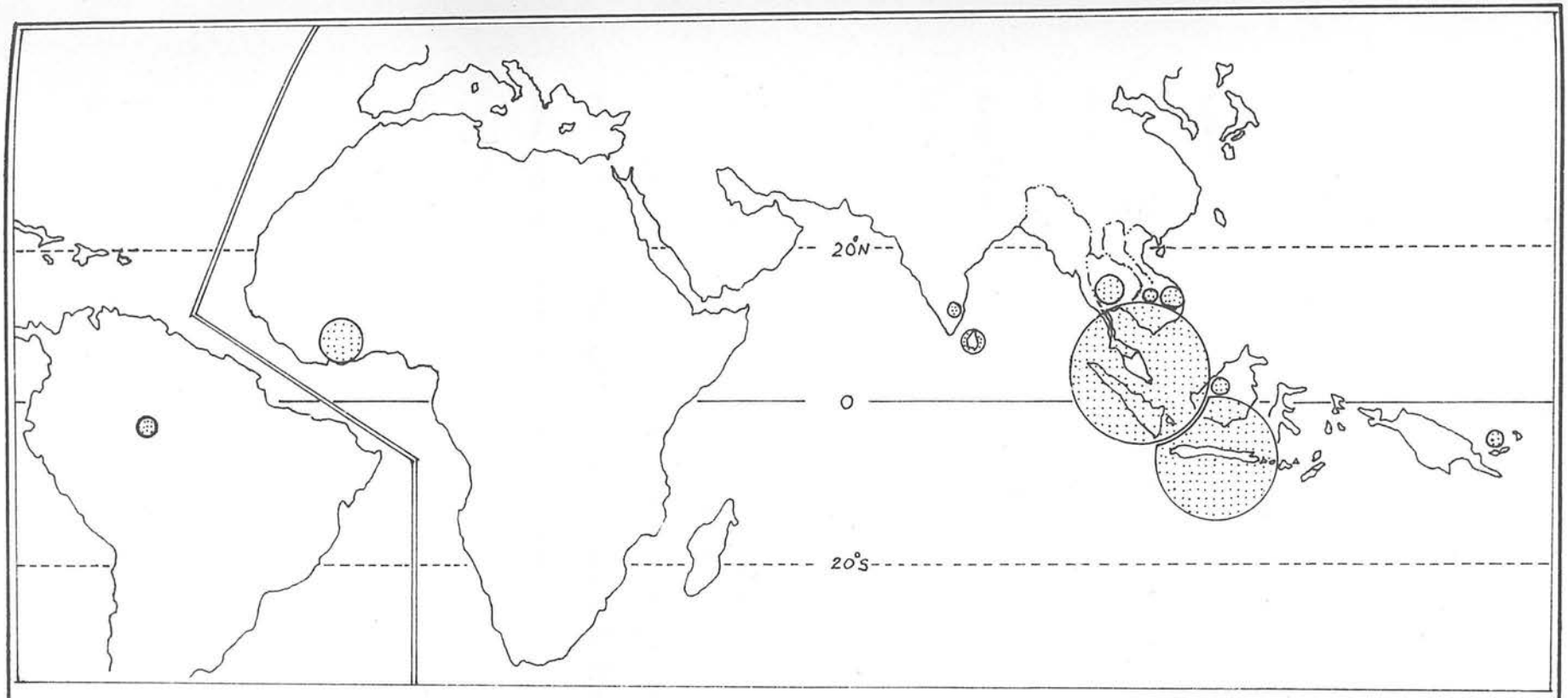
cent, over the same period, and in 1963, total synthetic production, even excluding that produced in Communist countries, was 372,500 tons over the figure for natural rubber.

Natural rubber's share of the market has been gradually reduced since the Second World War, dropping from 69 per cent of total world rubber consumption in 1947 down to about 49 per cent in 1963. Thus, while the world consumption of natural has been going up, from about 1 million tons (including U.S.S.R.) in 1947 to a little over 2.2 million tons in 1963, the consumption of synthetic has increased far more rapidly, from 0.6 million tons in 1947 to nearly 2.4 million tons in 1963.(6) Since the war the growth rate in synthetic rubber production has averaged nearly 11 per cent per annum. In contrast, the growth rate in natural rubber production has averaged only 7 per cent per annum, although highly variable within the period.

On the whole, the period since the war can be characterized as one in which synthetic rubber has gradually been eating away the market for natural and where the increased production and consumption of synthetics has tended to stabilize the price of natural. The elasticity of substitution between natural and synthetic has recently been made even higher due to technological developments. The appearance of new synthetics which are perfect substitutes for natural may well eliminate the zone of no competition due to technical non-substitutability previously enjoyed by rubber for about one-fourth of

---

(6) Rubber Statistical Bulletins (London: International Rubber Study Group). Several persons intimately connected with the natural rubber industry object to the view that natural rubber's share of the world market has been "eroded" by synthetic. Their view is that synthetics have filled a widening gap between total rubber consumption and world production of natural.



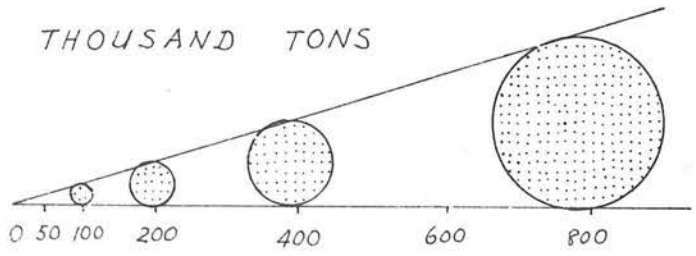


FIG 44

PRODUCTION OF NATURAL RUBBER IN PRINCIPAL TERRITORIES 1963

BASED ON FIGURES IN RUBBER STATISTICAL BULLETIN.

its uses.(7)

However, the above should not be interpreted to mean a future lowering in the absolute level of natural rubber sales; what does seem likely is a continued reduction in natural's share of the total rubber market. World demand for rubber will continue to increase, but the rate of increase in synthetics will continue to be greater than that of natural.

In addition to the competition of synthetic rubber, natural rubber producers in other countries also play an important role of competition of the rubber industry in Malaya. Although it has now reached the top position among the natural rubber producers since 1959, but Indonesia - the former king of natural rubber producers - has the world's largest planted area under rubber, estimated at roughly 4.5 million acres.(8) Production in that country, however, since 1959 is slightly less than in Malaya (Fig. 44) due to internal political and economic troubles.

The third most important rubber producing country is Thailand, which accounts for a little under 9 per cent of world production. Just before World War II, Thailand produced about 40,000 tons annually; in 1963 her production was 186,800 tons, an increase of about 350 per cent.

Other producers have also increased their production. Ceylon's annual production in recent years has averaged 93,000 tons, an increase of over

---

(7) The customary divisions are: natural 25 per cent, competitive 40 per cent, and synthetic 35 per cent. See T. R. McHale, "The Competition between Synthetic and Natural Rubber" in M.E.R. Vol. VI. No. 1. 1961, and also "Changing technology and shifts in the supply and demand for rubber, an analytical history" in M.E.R. Vol. IX, No. 2, 1964. There is still considerable difference of opinion on the degree to which existing synthetics are perfect technical substitutes for natural rubber.

(8) See "Rubber Statistical Bulletin", Vol. 19, No. 10, July, 1964.

50 per cent on the pre-war figure. Nigeria produced 59,000 tons of rubber in 1960, almost 10 times as much as in the years immediately prior to the war. In fact, almost all rubber producing countries have increased their production since the immediate pre-war years.

Most rubber-producing countries are replanting with high-yielding stock, although the rate at which replanting is taking place varies considerably. In most cases Government assistance, generally in the form of subsidies and bounties, is an essential feature of the replanting schemes.

In Ceylon, replanting is taking place at the rate of three per cent per year. In 1960, approximately 37 per cent of total acreage was planted with high-yielding clones. The average yield in that year was 326 lb. per acre per annum. This is lower than the Malayan yield, but an improvement on Ceylon's pre-war yield of 221 lb. per acre.

In Africa too, yields have been improved. Before the war the yield of rubber in Liberia for example, was only a little over 100 lb. per acre, while in 1958 it was over 600 lb. per acre. This is higher than the average Malayan yield (586 lb. per tapped acre on estates in 1958, and 780 lb. per acre in 1963), and reflects the advantage that the newer production areas, such as in some parts of Africa, have in that since they are expanding the area given over to rubber production they are able to plant immediately on the new land with high-yielding stock. Thus in the years immediately before the war the area under rubber in Liberia was approximately 64,000 acres; by 1962, 244,000 acres were being used to produce rubber.

As Table 7.1 shows that the proportion of total world natural rubber production accounted for by Malaya and Indonesia has fallen, since the smaller producers have increased their share.

Table 7.1. Percentage of natural rubber production by the main producers. 1952 & 1963.

	1952	%	1963	%
Malaya	584,238	32.6	788,539	38.1
Indonesia	750,494	41.9	573,097	27.7
The rest	456,000	26.5	705,864	34.2
Total	1,790,732	100.0	2,067,500	100.0

Source: Rubber Statistical Bulletins, Vol. 17, No. 8, May, 1963. & Vol. 18, No. 10, July, 1964.

The Belgian Congo produced only 1,000 tons of rubber on average between 1937 and 1939; by 1958, her production was 2 per cent of the world total at 40,000 tons. Nigeria's share of total production increased from 0.3 per cent in 1937-39 to almost 3 per cent in 1960. These increases are due both to improved yields and to expansion of the acreage under cultivation.

In short, the rubber planters of Malaya are now faced with the competition both from synthetic products and natural rubber producers in other parts of the world, although the former is more acute than the latter. They can only meet this competition by lowering their costs of production, improving the quality of natural rubber products, and increasing productivity through the planting of high-yielding material.

Prospects of rubber marketing.

Concomitant to the broad changes in the pattern of aggregate demand for natural and synthetic rubbers are significant structural changes in markets and trade. Before World War II, and in the immediate postwar years, the United States market absorbed between a half and three-fourths of all the

rubber produced in the world. If we ignore war-period distortions, American market dominance has been steadily decreasing over the past four decades. As Table 7.2 indicates, the United States market absorption has decreased from 73 per cent of total world production to a current rate of 39 per cent, and the trend appears likely to continue downward for many years to come, as the growth of rubber-tyred automative transport grows relatively more rapidly outside of the United States than inside.

Table 7.2. World production and United States consumption of rubber (synthetic and natural).

Annual average	Total World Production	U.S. Consumption	Percentage of U.S. Consumption
	(in long tons)		
1921-1925	412	303	73
1926-1930	716	404	56
1931-1935	845	411	49
1936-1940	1,082	559	52
1946-50	1,965	1,095	56
1951-1955	2,750	1,314	48
1956-1960	3,396	1,490	44
1961-1963	4,304	1,670	39

Source: Rubber Statistical Bulletin - various dates.

Of even greater significance is the precipitous drop in the relative and absolute absorption of natural rubber in the United States. Prior to World War II, the United States depended almost completely on natural rubber supplies, almost all of which was from South-East Asia.(9) Natural rubber producers, in turn, were largely dependent on American demand which, even at its lowest prewar level, still accounted for half the total world demand.

(9) See K. P. Ang, "Rubber Industry in Malaya" 1964, pp. 27-32.

Since the war, American consumption of natural rubber has dropped steadily, as Table 7.3 indicates, to the point where it accounts for only slightly more than one-fifth of the world production. At the same time that "development of a United States synthetic industry has resulted in decreasing American demand for natural rubber, it has also resulted in the emergence of the United States as the third largest rubber exporting country in the world."(10) Current trends indicated that the United States might become a net exporter of rubber, her exports of synthetics exceeding her imports of natural rubber, within the next several years.

Table 7.3. World production and United States consumption of natural rubber.

Annual average	Total World Production (in long tons)	U.S. Consumption (in long tons)	Percentage of U.S. Consumption
1921-1925	412	303	73
1926-1930	716	404	56
1931-1935	845	411	49
1936-1940	1,081	559	52
1946-1950	1,394	552	40
1951-1955	1,823	538	30
1956-1960	1,951	523	27
1961-1963	2,088	448	21

Source: Rubber Statistical Bulletin, various dates; and Malaya Rubber Statistics Handbook, 1954-1962.

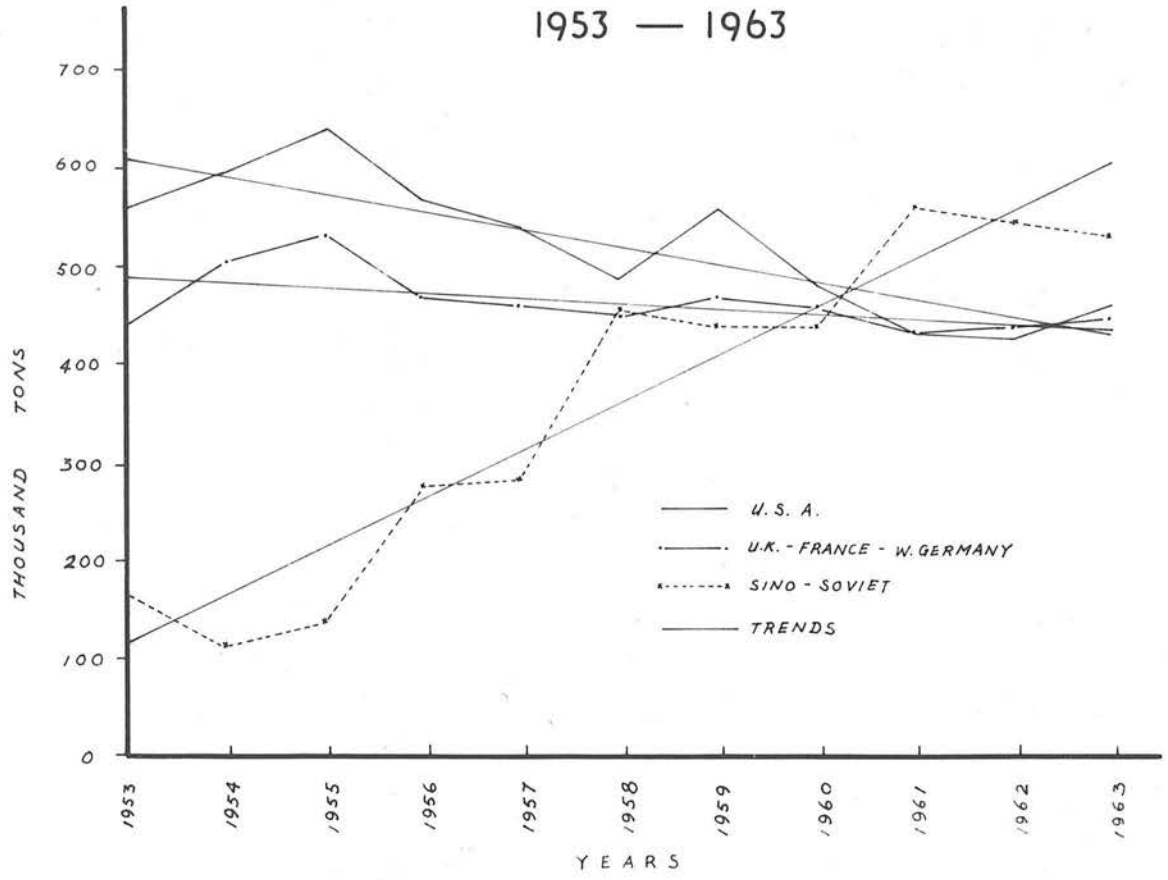
The downward trend in natural rubber consumption of the United States is relative not only to synthetic rubber, but also in terms of absolute consumption. Similar trends also appear to be emerging in the highly

(10) See T. R. McHale, "Changing technology and Shifts in the supply and demand for rubber, an analytical history," in M.E.R., Vol. IX, No. 2 Oct. 1964. p. 38.

FIG 45

WORLD DEMAND FOR NATURAL RUBBER IN THE MAJOR CONSUMING AREAS WITH DEMAND TRENDS

1953 — 1963



SOURCE : DATA BASED ON FIGURES IN RUBBER STATISTICAL BULLETIN, Vol. 18, No. 10 JULY, 1964, TABLE 6.

industrialised countries of Western Europe, as indicated in Figure 45, which outlines the changing offtake of the three major buyers of natural rubber and provides a ten-year trend line for each. "Of particular significance to the future of the natural rubber industry and natural rubber trade is the pattern of demand growth for natural in the Sino-Soviet areas which is contrary to the movements of the United States and of the Western European industrialised countries of Britain, France and West Germany. In the early 1950's demand for natural rubber in the Sino-Soviet areas was insignificant; in 1960 demand from the Sino-Soviet countries reached the level of demand for natural rubber in the United States; by 1963 it was almost a third higher and represented the largest area of world demand."

"For the Sino-Soviet countries, it is not unlikely that the United States - Western Europe pattern of natural rubber demand will eventually emerge - but considerable time lags are probable. The Soviet Union has already a large and well-established synthetic industry and has ample oil resources to draw upon. Rumania has recently purchased a complete synthetic plant and expects to approach self-sufficiency in rubber within a few years. The concentration on other industrial endeavours has resulted in less rapid development of the synthetic rubber industry as a whole from both the output and the technological development sense. Also relevant is the fact that natural rubber's advantage as the best all-round elastomer for many purposes makes it more suitable for the less specialised industrial complex of the Soviet countries at the present time."

"China, on the other hand, not only lacks significant synthetic rubber production capacity but also lacks a large-scale petroleum refining and

petro-chemical industrial capacity on which to build such capacity. Technologically, China is the most underdeveloped of all the major rubber consumers and is thus not likely to commit capital and technological resources for a synthetic industry when natural rubber is readily available. China is also even less capable than the Soviet Union of exploiting the increasing functional specificity of a wide range of synthetics. Access to an increasing supply of the best general-purpose elastomer, natural rubber, is thus to her immediate advantage at present."

Obviously, the present trends suggest that the world's natural rubber market will become increasingly dominated by the Sino-Soviet nations as the traditionally important American, British and West European buyers absorb less and less of the world's natural rubber output both relatively and in absolute amounts. By the 1970's, or even before, the Sino-Soviet nations, if current trends continue, will have expanded both their absolute offtake and their share of the market to the point where they will be in a position to either make or break the market at will.

In such circumstances, Malayan economic development planners are thus squarely faced with the question of fundamental structural changes in the economy and in trading relationships. "A continuation of current policy appears likely to place Malaya in an increasingly vulnerable relationship with the Sino-Soviet economies within a matter of years."* Policies to drastically alter internal patterns of new investments and promote industrialization and economic diversification are necessary.

Diversification policy.

It is generally recognised that the future economic development of Malaya cannot depend on rubber as heavily as in the past, since income from

* See T. R. McHale, 'Natural Rubber and Malaysian Economic Development'. (1965).

rubber is currently declining, despite increases in output. Therefore, diversification is necessary.

Diversification has long been the economic slogan of the Federation, but economic realities have as yet made it little more than a slogan. The statistics for 1963 show that over 73 per cent by value of net Federation exports were tin and rubber, despite the diverse crops which are produced and the various other metals which are also mined in the Federation.

As regards diversification, the policy should not be considered as simply that of replacing rubber with some other agricultural enterprise. This could be part of the result but only if it is economically feasible and fits into the general pattern of higher standards of living and economic stability for the nation as a whole. There should be an appraisal of the over-all structure of Malayan agriculture and approaches that will offer promise of improving standards of living, primarily of rural people, but also effecting over-all progress in the national economy.

Agriculture cannot be separated from the remainder of the national economy. This, in considering possible opportunities for diversification, the non-farm economy must be examined. For an individual rubber smallholder for instance, effective diversification might be obtaining a part-time job for him on a road-building project and tapping his rubber only when prices are high rather than shifting his rubber acreage to other crops. For a community or nation, effective diversification could be an expansion of industrial opportunities rather than changing from one crop to another.

It should also look at agricultural diversification in the vertical as well as the horizontal sense. Horizontal diversification consists of shifting

from production of one product to several products. Vertical diversification includes the opportunities for producing added value from a given product by further processing, handling, and marketing. Processing raw rubber into shoes for example is just as surely diversification as planting oil palm to partly replace rubber acreage.

At the same time, it should also be borne in mind that the aim of public policy must be to see that some of the resources in good times are husbanded in a form that can be used to mitigate depression. In depression all resources must be used as fully as possible, to keep the fall in incomes as small as possible.

In order to assess what needs to be done, it is important for planners at first to examine the resources of Malaya, and the regulators that can be used to achieve the aims of economic policy. The resources are its land, with climate, natural vegetation, minerals and transport facilities; its working population, with its age structure, rate of increase, mobility, and degree of education and skill; and its fixed capital resources, free capital market institutions and enterprise. The regulators are the currency and credit system; the structure of taxation and public expenditure; devices to control imports and changes in the size and detailed working of the part of the economy controlled by public bodies.

So far as land is concerned, Malaya has not in general particularly good agricultural land (see Chapter I). There is a great deal of it in relation to the present population, and much of the land now under jungle and swamp is probably as good as most of that now planted with rubber and rice. But Malaya's success in rubber, in relation to other tropical countries, is due

to labour supply, communications, health services, and the relatively large amounts of unused lands, in a suitable climate, rather than to any special suitability of the land to rubber. Double-cropping of rice is a good deal rarer than in Indonesia and other tropical or semi-tropical rice areas; and this is largely a result of poor soil.

The almost complete lack of seasons, especially in the south, is something of a handicap in fruit growing, but enables vegetables and other products to be grown almost continuously, with some reduction in costs in comparison with more seasonal areas.

One of the important features of the land, economically, is the relatively high cost of getting it into use. Clearing jungle and cutting roads and drains takes rather more men and more time than opening up a similar area in Europe. This difference should not be exaggerated. The practice of shifting cultivation over considerable parts of Borneo and Sumatra shows that the clearing of land is not inordinately expensive, if smallholders' crops with primitive transport are the standard of reference. In any event the capital cost of opening up new land is little more than what is paid to the workers who do it. If they consume few imports the burden on the balance of payments is slight.

A large amount of land in Malaya is forest reserve, protective forest on the high ground, productive forest elsewhere. Most of the land most suitable for rice growing is Malay Reservation and can be owned only by Malays, though there are indications that a good many of the owners are in fact dummies for non-Malay creditors and others with interests in land. Forms of land tenure vary from state to state and in some cases are very complex. The chief points of economic interest are that there still exist very substantial reserves which are alienated by the different state governments in accordance

with current policy as required, and control can be exercised over the purpose for which land is initially used.

Fragmentation of land is not uncommon, in spite of these large reserves, because of the different systems of inheritance which often bring it about that one owner has many scattered small pieces of land. True, it is possible to obtain new land quite cheaply, but the initial expense of moving to it and opening it up is by no means within the reach of many of the landless peasants.

Apart from its minerals, Malaya's land has one major asset in its excellent transport facilities. The state-owned railway running the whole length of the country on both sides of the main range was built largely out of revenue, derived from tin. In addition there is a good network of roads on the west side and a rudimentary one even on the east side of the range, and many navigable rivers. As a result much development of new land could be done by feeder roads and even in the East the basic framework for planning new development already exists.

Although diversification policy is still of little effect in Malaya, but one can appreciate that certain progress has been made as the implementation of diversification policy during recent years.

The Second Five-Year Plan clearly stated that it is necessary "to widen the variety of Malayan production, and emphasize the development of other suitable agricultural products in addition to rubber". However, some programme to achieve this end has been undertaken. For example, the acreage planted in oil palm increased from 135,000 acres in 1960 to 153,000 acres in 1962 as compared with 116,000 acres in 1957; in food crops from 118,000 to 146,000 acres. There were large increases in the production of poultry and

and poultry products. Additional work on fisheries has also been undertaken, as well as experimental work on tobacco and cocoa.

In 1962, at the request of the Government, the Ford Foundation provided a team of experienced agricultural specialists to make broad recommendations with regard to the diversification programme. The team was impressed with the progress made in rubber and rice but strongly urged the further development of forest resources, government encouragement of the private sector in the processing of agricultural products, the development of agricultural manpower, expansion and fuller utilization of the agricultural research effort, strengthening of long-term credit institutions and increasing the scope and vigour of land settlement.

Government has recently implemented a number of these recommendations. Steps have been taken to accelerate the work of soil survey and forestry survey. The Agricultural College at Serdang to have increased accommodation and teaching facilities has begun the academic year in May, 1964. Proposals are in hand for a major expansion of the Faculty of Agriculture, University of Malaya. The Government is also planning for an intensified expansion and co-ordination of its agricultural research effort.

In addition, recent government efforts to expand productivity and lift standards of living in rural areas have taken the form of extensive land development programs at both the state and national levels, improved irrigation and drainage, distribution of higher-quality and higher-producing seeds, plants and animals, construction of rural roads, stimulation of co-operatives, educational and financial assistance to rural people, the well-co-ordinated, over-all rural development program, and similar programs. Specific evidence of this success is found in the rapid increase in rubber yields and the

expansion of double-cropping of rice as well as the increase in the rice yields.

Within the private economy and with the assistance of government efforts, progress has also been generally good. Evidence is the initiative with which estates have replanted rubber to higher-yielding types, experimented with different types of tapping systems and cover crops, planted oil palm, tried on their own such new crops as cocoa, manila hemp, tobacco, coffee, tea and others, and greatly improved facilities and services for estate works. The rate at which smallholders have established self-help co-operative societies, participated in farmers-club-educational activities, and played an active part in community rural development programs reveals the same vigor.

With these advances, the country is in the fortunate position of being strong enough to make any adjustments that are needed to meet changing economic conditions with confidence.

Implementation of agricultural diversification policy.

Diversification presents many problems, especially in agriculture. The crops must firstly be suited to the equatorial environment, that is, they must be capable of giving sustained yields over a period of time without straining the fertility of the soil. In Malaya the best possibilities are tree rather than annual crops. But planters would have to face competition from other tropical areas growing the same crops. Such areas might have advantages derived from an early start, from some particularly favourable physical factor of soil or climate, or from proximity to markets. Most of the known tropical crops are already grown in considerable volume in one tropical country or another, and any attempt to compete with a rival territory implies a capacity to produce the same crop cheaper and better, granting that the market for the commodity is not already saturated.

For the peasant smallholder the problems are more difficult to solve because of his lack of capital and technical equipment, which limits the range of possible crops to those which do not require an initial heavy capital outlay, or elaborate equipment for crop processing. Again, the small size of each holding, the different cultivation and processing techniques, and transport and marketing difficulties may prevent the peasant from planting more than one type of revenue crop on his land. Although the original Malay holding is typified by a large variety of crops, yields are usually low and the products are of a quality insufficient to command any but the lowest prices in the market.

The modern demands for high quality and standardization are best served by some degree of specialization. Hence the need for diversification applies not to conditions within each peasant holding but within the country as a whole. The ideal agricultural economy may be visualized as one in which the agricultural population is composed of crop specialists who do not all plant the same crop, but rather a number of equally important cash-crops.

The overwhelming importance of rubber emphasizes the lop-sided character of the Malayan agricultural economy. The other commercial crops of importance are coconut, oil-palm, and pineapple, of which oil-palm is exclusively an estate interest.

In general, there are two ways in which diversification may be achieved: by addition to existing land under crops, when a variety of crops may be planted and not necessarily those that are currently the most profitable, or by replacement of a proportion of existing crops with others, in which case (11)

---

(11) See Robert Ho, "Mixed-farming and Multiple-cropping in Malaya" in Journal of Tropical Geography. Vol. 16. Oct., 1962. pp. 1-17.

the comparative profitability of the alternative crops must be more critically considered.

The method chosen must depend largely on availability of land. In Malaya, where new lands being opened up are in general suitable only for rubber, then the replacement of a proportion of the existing acreage of rubber needs to be considered to achieve any significant improvement in diversification.

The rubber tree - Hevea brasiliensis - is one that has evolved on the highly leached acid soils of the humid tropics and given suitable climatic conditions and fertiliser treatment it will thrive on a wide variety of soils having PH values of 4.5 - 6.0 and low nutrient status. The only soil factors which will limit its growth, apart from deficient levels of nutrients - easily amenable by fertilizer application, are: (1) the presence of deep, very acid peat; (2) the presence of concretionary material or of rocky parent material sufficiently massive to restrict root growth; (3) badly impeded drainage; (4) excessive drainage; (5) high soil PH values of above 6.5 as found with young limestone-derived soils.

It is this robustness of rubber that can help in diversification, for it will grow on soil which would not support profitable production of crops more demanding in their soil requirements.

The total acreages of rubber and other plantation crops in Malaya are given in Table 7.4. Of these crops only oil palm seems likely to replace rubber as a crop to any significant extent.

Coconut would not be planted as a replacement for rubber, as it is less profitable and is itself facing formidable competition from cheaper alternative materials. In Malaya, attention is being directed at present to rehabilitating the coconut industry rather than extending it at the expense of other crops

Table 7.4. Acreages of the different crops. 1962.

Crop	Acres
Rubber	3,994,000
Coconut	510,000
Oil palm	153,000
Pineapples	43,905
Manila Hemp	729
Cacao	1,638
Pepper	711
Tea	9,503
Coffee	16,118

Source: Annual Report of the Department of Agriculture for the year 1962. pp. 73-74 Appendix 4.

and in some areas it is being replaced by oil palm. There is a significant acreage of pineapple in Malaya but this crop is facing strong competition on the world market and is restricted almost entirely to deep peat soils for which it is the only suitable crop.(12) Pepper and coffee are grown in small patches at the smallholder level and are not likely to expand to any significant degree, while the acreage of tea is restricted largely to upland areas where rubber could not be grown. The cultivation of tea on lowland areas can be profitable, but as tea is in danger of over-production on the world market it seems unlikely that any large extension of this acreage will occur.

Hemp and Cacao offer interesting possibility in crop diversification. Hemp however faces its own competition from synthetic fibres while cacao is a luxury crop that could be in danger of over-production with any large extension in acreage. However both have been planted over limited acreages in Malaya and as such present useful although small scale diversification of the economy.

(12) See "Report of the Commission of Enquiry into the pineapple industry in Malaya and statement of Government's future policy for the industry." Federation of Malaya. Cmd. 19 of 1960.

Oil palm, manila hemp and cacao are all more demanding in their soil requirements than rubber, and practice in Malaya is to concentrate their production on the better soils. Oil palm is being planted on the fertile coastal alluvial soils of Malaya as a replacement for old uneconomic rubber plantings, while cacao has been planted on soils derived from basic volcanic rocks in Malaya in preference to rubber:(13) as yet such plantings in Malaya have not been very successful, for younger soils with a higher nutrient status is needed as for giving better growth of the young plants.

Some analytical data on typical soils of Malaya have been studied by several experts as we have pointed out in Chapter I. There is a wide difference in the base content and phosphate content of various soils. The soils of the Selangor and Segamat series in particular have a high nutrient status and oil palm is growing very successfully, without fertiliser treatment on the Selangor series soils.

Nevertheless, soil survey work in areas as yet uncleared is actively proceeding in an effort to delineate the better soil types so that rational land cropping policies can be followed. In general, it is ideally to develop oil palm cultivation on the more fertile soils and rubber cultivation on the poorer. But there is little suitable new land immediately available for exploitation by oil palm since the existing estates and agricultural settlements are already sited on the better soils (all suitable coastal alluvium is already planted). Diversification of the Malayan agriculture depends in

---

(13) See H.A.L. Luckham (ed.), "Report on the Working party set up to consider the development of a cacao industry in the Federation of Malaya", (Kuala Lumpur, 1955) p. 2; also E.E. Cheeseman, "Report on potentialities for the Cultivation of Cacao in Malaya, Sarawak and North Borneo". H.M.S.O., 1948, (Col. No. 230).

the first case therefore on the replacement of rubber on the more fertile coastal alluvial soils and possibly on the basalt-derived soils by oil palm, and then the planting of oil palm and possibly hemp on soils derived from basic igneous rocks as they are revealed by exploration. It is estimated that there are upwards of 700,000 acres of coastal alluvium in Perak, Province Wellesley and Selangor alone, and up to 100,000 acres of soil derived from basic igneous rocks,(14) on which oil palm could well replace rubber cultivation. It has also been found that schist and shale-derived soils have a high potash content and large scale oil palm cultivation may eventually prove to be a practicable proposition on the better of these soils. The base status of the "older alluvium" soils and that of many other of the inland, sandy soils, is however so low that only rubber cultivation could be considered.(15)

Oil palm has been planted on soils derived from granite and sedimentary rocks in south Malaya but in these areas generous applications of fertiliser are required to maintain good palm growth and yield. This of course reduces the profitability of such plantations but if the acreage of oil palm is to be extended then further such planting might need to be considered. At the same time it is important to consider certain other matters. The production and export of high-quality palm oil requires well-organized and supervised

---

(14) Data was given by Dr. Panton and Dr. Wycherley, at the Regional Conference of Southeast Asian Geographers. The Conference was held at the University of Malaya, Kuala Lumpur, 2nd to 8th April, 1962.

(15) See Rosenquist, E.A. "Soils and the Fertilization of rubber and oil palm", in Journal of Tropical Geography, Vol. 18, August, 1964, pp. 148-156; also B. S. Gray, "The Potential of the oil palm in Malaya" in Journal of Tropical Geography", Vol. 17, May, 1963. pp. 127-132.

maintenance, harvesting, transportation, and processing at the oil mills. If small farmers are to participate successfully in the production of oil palm, technically up-to-date palm oil mills must be established, having firm contractual relations with small growers. The necessary technical advisory service must be provided on the farm as well as up to the time of delivery at the factory. This could best be achieved by an institutional innovation which combines oil palm estates, small oil palm growers and an oil mill. Such a plan provides necessary supervision, assured processing facilities and flexibility of operation within an enterprise environment.

The main palm oil producers in Africa are Nigeria and the Congo, and oil palm products are an important item in their exports. In both these countries, yields, due mainly to a less favourable climate and poorer soil rather than to poorer planting material, are very much less than on the Malayan coastal clays.* Mature dura palms yield 1.5 tons of oil per acre per year on Malayan soils, in Nigeria and the Congo the yield is less than one ton.

In Indonesia, another important producer, on the liparite soils of Sumatra's east coast, yields of 1.5 tons of oil per acre were obtained in pre-war years from Deli dura planting material. This is similar to the yield obtained on the Malayan coastal clays. Thus Malaya and Sumatra could be in a very strong position when competing with other palm oil producing countries, which is not necessarily the case in the rubber and copra industries.

But the long-term world market prospects for palm oil, palm kernels, palm kernel oil, and palm kernel cake and meal are good; as the South Pacific Commission pointed out the vegetable oil market is far from saturation point.(16)

---

(16) See Lefort, E.J.E., "Economic Aspects of the Coconut Industry in the South Pacific" in South Pacific Commission Technical Paper No. 92 (New Caledonia, 1956).

* See J. K. Coulter, 'Mineral Nutrition of the oil palm in Malaya', M. A. J., Vol. 41, No. 3. (1958). It must also be pointed out that inefficient methods of processing and lack of adequate and efficient transportation facilities are partly responsible for the lower yield of oil in Africa where a large proportion of the planted areas are owned by the peasants.

While oil palms and oil mills combined require a higher investment per acre than do rubber plantations, the prospective returns on suitable soils are in keeping with this heavier outlay.

In view of the large acreages of new rubber plantations being developed in other South-East Asian countries, in Africa, India and South America, it might be wondered whether cultivation of oil palm as an alternative to rubber should not be more actively encouraged and the replacement of rubber by this crop on the more fertile soils in Malaya be speeded up.

Until recently the cultivation of oil palm has been approximately at the same level of profitability as that of rubber, but with the introduction of newer and higher yielding varieties of oil palm and the probable lower price for rubber in the future, a margin may well develop between the two crops that would make oil palm more profitable and so speed the replacement of rubber by this crop. The larger commercial organisations are aware of this and are actively pressing on with oil palm cultivation to balance their rubber commitments elsewhere. However there are very large acreages of rubber on small estates and smallholdings on the coastal alluvial soils that are unlikely to change without some direction from above, and thought should be given to whether these holdings should be encouraged to replace their rubber with oil palm, using co-operative processing factories if necessary. A necessary preliminary would need to be an authoritative survey of the comparative profitabilities of the two crops at present and possible future price levels.

Although coconut would not be planted as a replacement for rubber, it is as far as the planted acreage is concerned, the third most important crop in Malaya, and from the standpoint of diversification, its future prospects should not be ignored.

"During recent years, some coconut estates are shifting from coconut to oil palm. On the basis of average yields of oil per acre being one-half ton or less from coconuts as compared with one ton or more from oil palm, with the oil palm reaching bearing age in about one-third of the time required for coconut, this shift appears justified. High yields of coconuts appear possible on good soils where the crop is well-managed, but these same soils will produce much higher yields of oil when planted to oil palm."(17) On the estates, this trend from coconut to oil palm can be expected to continue.

For smallholders the problem is more complicated. The usual smallholder with coconut operates a mixed farming system with various types of fruits and vegetables being grown underneath the basic coconut planting and thus the total dollar yield per acre is much greater than the reported yield of coconuts alone.(18) Under these conditions, much land will continue to be planted to coconut in spite of a lower oil yield per acre than oil palm because of the additional income from other sources. Also, until more oil palm processing factories are built and a firm, reliable market is established where the smallholder can sell his daily harvest, the smallholder cannot change to oil palm.

However, expanded coconut planting is not a promising form of diversification. Until better varieties and methods of production provide the opportunity to increase yields, major emphasis should be on other, more potentially-rewarding enterprises.

---

(17) See B.S. Gray, "The potential of the oil palm in Malaya", in Journal of Tropical Geography" Vol. 17, May 1963. pp. 126-128.

(18) See Robert Ho, Op.cit. p. 6.

Nevertheless, the crop will continue to be important. It will be produced on some lands because there is no other commercial crop that is suitable and on others because it helps to produce the greatest possible total income per acre in a mixed-crop situation. Fresh coconut is an essential item in the diet of the Malayan people and this limited demand will support some production even with reduced income from copra.

The Second Five-Year Plan provides M$ 15 million for a manageable coconut rehabilitation and replanting program and a pilot program is being undertaken in Johore. Where lands have been recently drained or otherwise developed to cause a substantial potential increase in coconut yield, replanting to coconuts on smallholdings is justified. However, to replace coconut with more coconut simply because the area has always been in coconut is not sound.

In view of the changed competitive position of the coconut industry, this rehabilitation and replanting program should be critically reviewed and appraised. It appears desirable to re-orient this program towards a rehabilitation of smallholders in the coconut area rather than simply replanting coconut. In other words, it is the people, not the trees, that need help.

Some of the funds and efforts of educational agencies could possibly be better spent by assisting coconut smallholders to improve their mixed plantings of vegetables and fruits, in planting coffee, pineapple, cacao, or other crops, and in other ways to diversify away from coconut rather than to intensify with a crop which at present does not offer much promise.

In the coconut smallholder areas with relatively-low yields and little chance of yield improvement because of relatively-infertile soils, the long-time interest of some smallholders may be better served by assisting them in moving to more fertile areas or helping them with part-time employment to supplement their earnings.

Besides these perennial crops of rubber, oil palm and coconut, certain additional crops are needed to be studied, such as pineapples and sugar cane.

Pineapples are a crop which has been grown, processed and exported successfully in Malaya for over three generations. A large acreage of unused peat soil, well suited to pineapple is available. The crop is well suited to the climate. Commercial firms should be encouraged to expand pineapple production.(19) Like the case of oil palm, the strategic centre of this industry lies in the processing plant. It conducts research, organizes the harvesting, controls the quality and markets the product. Perhaps, the factory could be combined with an estate and simultaneously could contract with small growers for the purchase of their output.

Another crop which might prove to have a good economic location on the loamy soils is sugar cane. Commercial firms which are interested should be given the opportunity to undertake the venture. The processing plant, in association with a large commercial plantation, could provide the facilities needed by smallholders. This could be done either through a co-operative association of small cane growers or merely by contracts between the mill and any number of individual growers. If the government makes peat or alluvial clay land available for cane sugar production on a long-term basis, it has the opportunity to require the large-scale enterprise to purchase cane in an equitable fashion from smallholders and to provide them with technical advice in the field. By such contractual relationship the small producers become beneficiaries of the research and efficiency of the large-scale producers including their processing factors and marketing arrangements.

---

(19) See R.J.W. Neville, "The Plantation in Malaya - casestudy of a pineapple Plantation in South Johore" in Tijdschrift voor Economische en sociale Geografie (Mar. 1964) Vol. 55. pp. 57-69.

Other tropical crops such as cacao, manila hemp, coffee and tea should also be given further study to determine which are sound prospects. No attempt at detailed study of each crop can be made here. Such studies of future development policies should be carried out by the government or the appropriate organisations, in order to provide a basic framework for diversification.

As for the most important food crop - rice - although remarkable progress has been made, imports are still necessary. It has long been recognized that one of the most promising fields for diversification in Malaya lies in the expansion of rice production. This will provide more employment and income for farmers and at the same time will reduce foreign exchange costs. As we have discussed the prospects of this crop in Chapter III and Chapter V, it is not necessary to repeat here.

In addition, for the smallholder, diversification can come through the better use of livestock.(20) For ruminants such as buffalo, cattle, and goats, an abundance of forage is important. The propagation of appropriate varieties of legumes as green manure for tree and other crops and simultaneously as fodder for animals seems to hold promise. Small, fenced, demonstration plots could help publicize such practices.

Goats are in general healthy, reproduce readily and produce good meat as well as milk, mohair and leather. The breed could be improved by making good sires available for stud service.

Chickens, ducks and geese can be upgraded at relatively small cost by making superior brooding eggs or baby chicks or young males available to smallholders through commercial channels or through farmers' co-operative associations.

---

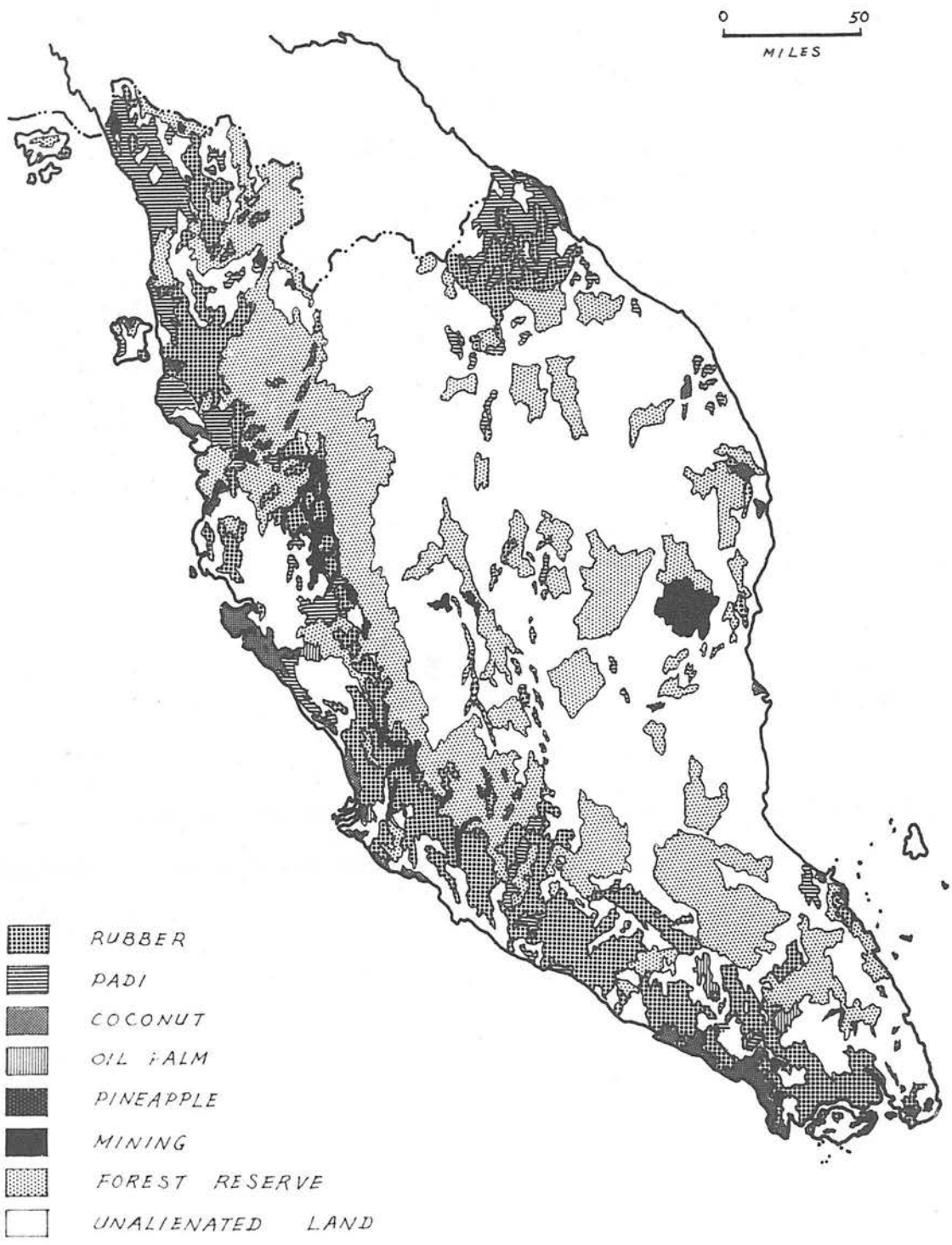
(20) See R. Ho, "Mixed-farming and multiple-cropping in Malaya" in Journal of Tropical Geography, Vol. 16. Oct., 1962. pp. 1-17.

Pig production could be expanded substantially on small farms. This could be based on the feeding of high-yielding bitter tapioca roots as well as other coarse feed, combined with vegetable or animal protein, such as coconut meal, fishmeal, palm kernel meal or oil cake. The prussic acid must be leached out of the tapioca in order to make the product suitable for feeding. Bitter tapioca produces prolific amounts of starchy tubers even on the poorer soils which may include some worked-over mine land. This type of pork production could provide additional income for small farmers.

At present, some of the supply of animal proteins is being met by village production of chickens, ducks, geese, turkeys, goats, and sheep; by specialized pig-feeding operations on a small scale using mostly farm-wasted and otherwise useless forages such as sweet potato vines; by the production of meat from buffalo and cattle grazing on less-valuable lands; and by the production of some milk from cattle maintained mostly by labourers on rubber estates and near large cities. A commercial livestock feed industry has not yet been developed in Malaya.

Some research is being conducted in Malaya that is designed to improve livestock production. Most of it, however, is along the classical lines of basic research in livestock in the major temperate-climate livestock countries of the world-breeding and cross-breeding to produce improved strains. Although improved types are important and are needed in Malaya, the native types, especially the poultry, goats, and pigs, appear good. Returns from research are likely to be much greater in the near and intermediate future if emphasis were placed more on nutrition and management studies. Malaya should devote her limited research facilities to feeding, developing forages, establishing management principles, and the like. Thus she will produce more eggs,

FIG 46 LAND UTILIZATION



BASED ON LAND UTILIZATION MAP (SURVEY DEPT., FED. OF MALAYA, NO. 29-1953).

poultry, meat, and milk at lower costs with facilities now at hand.

In short, the only way to counter the potential threat to the stability of the country arising from its overdependence on rubber is to diversify the economy.

Diversification in the Malayan context can be along two parallel lines: the first is to expand the established industries so as to reduce the relative, though not necessarily the absolute, contributions of rubber to the national income. At the same time diversification can take the form of the introduction of new industries, primary or secondary or both, into the present pattern of industries.

The best prospects for diversification lie in agriculture. The present unbalanced structure of agriculture can gradually be altered by a policy aimed at encouraging the development of crops other than rubber.

Of these, oil-palm offers good possibilities. Not only is the established crop familiar to planters in Malaya, but the world market for vegetable oils is a promising one.

With reference to diversification policy, further land use studies and detailed soil surveys are also of fundamental importance.

Land use and soil survey.

The pattern of land use reflects the extraordinary degree of localization of the different kinds of economic activities, especially those of a primary sort. As Fig.46 indicated, most of the land in Malaya is unoccupied and to a large degree unused. Most of the central and eastern parts of the country remain under forest. The forested area occupies nearly three quarters of the total area of the country. Patches of land in rubber, paddy, or other crops

have been carved out of the forest, but these kinds of land use are localized to a marked degree in a relatively narrow band of highly developed territory along the western portion of the peninsula and in a major area in the northeast.

About one-third of the forested area is set aside as reserves for various purposes. The remainder consists primarily of Crown and State Land. Most of the reserves lie below the one-thousand-foot contour, (Fig. 46) covering forested areas of greater importance than those at higher levels. It is the more valuable lower forests, however, which are being cut into most vigorously, either in the course of lumbering or in the expansion of agricultural and mining land.

The need for greater control over forest exploitation has been growing, therefore, and one of the recommendations of the World Bank report on Malaya was for the development of plans by which the higher-level forests above the one-thousand-foot contour can be brought under a system of forest management in which cutting would be on a sustained-yield basis. In addition, some of the forested areas consist of mangrove or fresh-water swamps, the economic value of which is surprisingly high, since wood from these areas is used as fuelwood and construction material. These also represent opportunities in some areas for the expansion of agricultural land, particularly where peat formations underlie the swamp forest growth, although the difficulties of bringing peat lands into economic production have yet to be resolved adequately.

"The developed portions account for less than one quarter of the total area of the country." As stated, "their chief concentration is in the western littoral, generally less than 50 miles wide and extending down the entire coast from the border of Thailand to Singapore. Here is found the greater

part of the population of the country, almost all of the estates, almost all of the tin mines, and a very large proportion of the paddy lands. Within this area are located most of the facilities for commercial activities as well, and it is identified by the densest populations, the largest proportion of transportation and communications facilities, most of the controlled irrigation facilities, power installations, and the largest proportion by far of the processing installations for Malaya's primary production."

"Most of the western area is characterized by rubber estates. These extend in a discontinuous band from northern Kedah southward to Singapore itself. The rubber belt tends to be most broken in Perak, where swamp and peat areas extend over considerable acreages and where tin-mining tends to be highly localized. Almost all of the rubber estates lie below one thousand feet in altitude, and although many have been located near sea level, the greater number are sited upon somewhat higher ground characterized by better drainage."*

The total area under cultivation is about 17 per cent of the country as we have mentioned in Chapter III. This is quite similar to the percentage in Japan, for example, but the agricultural occupance in the two countries is quite different. In Japan, agriculture is oriented primarily toward the production of foodstuffs for domestic consumption, and the areas in nonfood crops are conspicuously small. In Malaya, the situation is almost reversed, as we have pointed out before that less than one quarter of all the area in agricultural land uses in Malaya is concerned with the production of food. Even if it is assumed that the areas in strictly subsistence market gardens and orchards associated with the villages are understated, which they probably are, the dominance of commercial agricultural land uses is striking. In no other country in Southeast Asia is this imbalance between food and nonfood crop acreages so remarkable.

---

* See N. Ginsburg, 'Malaya'. pp. 373 – 376.

However, from the standpoint of diversification, it is important not only to improve the technique in order to increase the productivity of rice and expand the areas of rice cultivation, but to diversify to other crops. But one may ask, should there be expansion in all crops or should this be confined to a few specific crops? This is largely a question of economics. However, quite apart from economic considerations, some diversification of crops is possible if not essential from purely ecological considerations alone.

The ideal type of crop husbandry is, to a certain extent, predetermined by the ecological variables. For example, the possible alternative crops suited to inland swamps are limited to wet padi or sago palm; rubber would be incompatible. Steep land areas are best utilised for timber production from forests. Destroying the native forests to supplant them with any crop is disastrous. The resulting increase in soil erosion and run-off from catchment areas bring about an enormous wastage of the land resources in these territories, and land, unlike labour, capital and management, is irreplaceable.

The maximum area available for the choice of alternative crops must be delineated, that is, the various technological possibilities need to be presented in the light of the prevailing ecological variables. To do this efficiently, a land use survey for Malaya must first be carried out and a planning commission set up to promulgate a national land policy. This body, to be effective, should consist of a group of individuals with diverse interests, but all capable of assessing land usage in the area.

On the other hand, the most varied agricultural resource in Malaya is its soils, which range from those that are unproductive to some of the most fertile found in the tropics.

The fate of any agricultural enterprise depends to a large extent upon soil. A plantation of a smallholding or a land development scheme on good soil has a better chance to be successful, although chemically, the fertility of soils can be changed by a matter of "additives". But if a land-settlement venture located on poor soils means keen disappointment to a great many families, and a capital loss running into millions of dollars. The planting of rubber or oil palm on an ill-adapted soil involves an error that may be hard to discover for a decade and will be hard to correct at least for a generation. The reservation of areas of good, arable soil for wildlife or forest purposes means under-utilization of a valuable asset.

Soil surveys, involving only moderate cost, can increase the likelihood of success for any agricultural venture. Malaya, at the present stage of development, is in need of reconnaissance studies which will reveal large areas now classified as forest reserves. Reconnaissance studies have been completed for the states of Trengganu and Kelantan. Field work has been completed for Kedah and Perak. Surveys are now in progress in Pahang and Johore. In addition, many surveys of limited areas have been made by estates and in association with development programs. But much of the country has not been surveyed.

In 1962, W. P. Panton, Soil Scientist of the Department of Agriculture, published a generalized soil map drawing on all existing knowledge. While very useful, this map still has large unknown areas. (Fig. 5).

Based on the limited existing knowledge, the Department of Agriculture thus groups the soils presumably suited for agriculture. In which, approximately 5.5 million acres have already been developed, while still 8 million acres are possibly suitable for agricultural production. Such soil surveys

as have been made indicate that the area under agricultural production might in time be increased from 17 per cent to about 40 per cent of the total area of the country.(21) Undoubtedly additional soil surveys would reveal additional acreage adapted to agricultural use, though topography is such that large areas can never be in agriculture and must remain in forest. These areas will constitute the true and proper forest reserves.

Soil survey work rates at or close to the very top among projects of agricultural diversification and development. It should be pushed as rapidly as qualified personnel can be obtained. In addition, a land use survey on the broader aspects of the physical properties of the soil, e.g. drainage conditions, the presence or absence of any physical barrier which might significantly impede root development, would provide not only a more rational basis for the designing of patterns of crops for the areas under consideration but also speed up the survey for land use.

Prospects of other economic sectors.

Apart from industrial and agricultural sectors, to a certain extent, we should also consider the prospects of other sectors of the Malayan economy as a whole. These include mining, fishing, forestry, and entrepot trade.

Mining. Among the mining industries tin is the most important as well as the second most important product for the country as a whole as we have mentioned in Chapter II and Chapter III.

"The tin outlook has some striking similarities with that for rubber. There is a close competitor, aluminium, in which technical progress has been

---

(21) See "Annual Report of the Department of Agriculture for the year 1962," pp. 63-64.

rapid and to which tin has been surrendering an increasing share of the market.(22) Demand for tin in the United States has failed to increase since the war; consumption is now less than in 1935-8, in spite of the great increase in industrial output. Similarly, consumption of tin in the United Kingdom has declined since 1950 and relative to pre-war. The fall in American and British tin consumption since 1950 has been offset by a rise in demand from Continental Europe and Japan, and it is this, together with purchases for the United States stockpile, that sustained the tin market in the fifties. But it is unlikely that the present rates of growth in Europe and Japan will continue; the growth rates of industrial output were probably abnormal in the fifties, and it is also reasonable to expect American tin-economizing methods of production to be applied more widely in Europe and Japan, since the consumption of tin per ton of tinplate is still much higher than in the United States. A detailed examination of the various uses of tin in the United States and Britain does not reveal any points of growth. Even though the tin market recovered in 1961 and 1962, the long-term market prospect is thus not hopeful, though the threat is probably not as great as for rubber."

"The similarity with rubber does not end here. The market has to cope with the erratic contributions of the Soviet Union and China to world tin supplies. Sales by the Soviet Union, possibly also including sales from Chinese production or stocks, have fluctuated: they were 3,000 tons in 1956, 22,000 tons in 1958, 11,000 tons in 1960, and 5,600 tons in 1961. The figure of 11,000 tons represents about 8 per cent of non-Soviet production. As for

---

(22) A full analysis of tin consumption and prospects is in W. Robertson, "The Tin Experiment in Commodity Market Stabilization" (Oxford Economic Papers. Vol. 12. No. 3, 1960.).

rubber, it seems difficult to forecast production and consumption for the Soviet bloc. At the same time, there is also a vast United States stockpile overhanging the market. This stockpile was recently revealed to contain 350,000 tons of which 164,000 tons - a little more than a year's world production - is regarded as surplus."(23)

"There are two respects which tin situation differs from that of rubber. First, tin is subject to an international stabilization scheme. Secondly, no large growth of low-cost production is in prospect, even if extra output could be marketed."

"Tin is a wasting asset, and there are signs that Malayan alluvial deposits are becoming increasingly poorer in tin content. A sustained rise in the price - as in 1961 - is required to justify the working of lower-grade deposits or the reworking of old mines. Again there is, of course, uncertainty. The possibility of the discovery of new deposits cannot be ruled out, for little prospecting has been carried out in the last thirty years or so. There have been improvements in methods of mining, and the imminent decline of tin, as of rubber, has been foretold so frequently that one must hesitate in one's pessimism. As the I.B.R.D. Report pointed out, there is a strong economic case for an active policy of prospecting, and little case for preferring agriculture to mining: ... there is a strong presumption that it will be worth while from a national viewpoint to extract valuable mineral deposits, even though, land is thereby made unavailable for agriculture for a long period, unless a particular mining location is such that serious secondary damage in surrounding agricultural areas can be expected."(24)

---

(23) See International Tin Council, "Statistical Year Book", 1964.

(24) See I,B.R.D., "The Economic Development of Malaya" (The Johns Hopkins Press, 1955) pp. 99-100. See also W.M. Corden, 'Prospects for Malayan Exports' in Silcock & Fisk, 'The Political Economy of Independent Malaya'.

Obviously, Malaya's known reserves of tin ore are gradually being worked out, but greater efficiency in methods of mining and recovery have made it economic to work or re-work progressively poorer ground. For example in the 1880's when the rich Kinta tin-field in Perak was first opened, the miners there expected to recover 6 Katis of tin ore from each cubic yard of soil, the current Malayan average rate of recovery is no more than one-third of a kati per cubic yard.(25) Malayan output has been maintained at around the level of 50,000 tons of tin per annum for half a century and it may even increase slightly for a few years to come but after a decade or two a sharp decline seems inevitable.

No new major deposits have been discovered since 1945 despite methodical prospecting in recent years following the end of restrictions due to the Emergency. The Malay Reservation Lands, previously closed to prospectors, are now being explored on the understanding that Malay capital is to participate in any new mines opened in these areas.

A great deal depends on the future price of tin since so much mining land is now only marginally profitable to work. A modern dredge costs a million pounds sterling in the first instance and may cost half that sum again if it is taken down and reassembled at a new mine.(26) This capital outlay has to be recovered from the operating surplus of mining operations over ten or twenty years or more ahead. Other mining methods are less costly in initial outlay compared with dredging but the working life of such mines is usually shorter and their operating costs are higher.

---

(25) Straits Budget, 25th April, 1962, reporting data from the Government Mines Department. A Kati is a Malayan measure of weight equal to $1\frac{1}{3}$ lb.

(26) See I.T.C. "Report on the World Tin Position for the years 1965 to 1970" pp. 55-56.

The price of tin, like that of rubber, has fluctuated widely. (Fig. 11). In 1953 the Federation played a leading part in promoting a new International Tin Agreement designed to stabilise prices by the combined use of a buffer stock and restrictions on output. In the period 1957-59 it was necessary to restrict output substantially; many mines closed down and some 15,000 workers were laid off. Since 1961 the outlook has been complicated by the decision of the United States Government to sell 50,000 tons of surplus tin from its stockpile. American intentions are as yet imprecise but these sales, like the corresponding disposal of rubber, must result in lower prices that would otherwise be paid for current output.

The most productive Malayan tin-mines are low-cost producers by world standards and will probably hold their own so long as they have land to mine. However 30 per cent of the dredges are expected to close down by 1970 unless extensive new tin deposits can be found for them to work.(27) The future of the smaller high-cost, mainly Chinese, mines depends on the price of tin. If the miners feel reasonably assured of a remunerative price for some years ahead they will continue to work their existing mines and will open new ones. Without that assurance many marginally profitable ore deposits will remain unworked.(28)

However, the prospects for the future appear to lie in three main directions: (i) in land alienated for agriculture within the Malay Reservations; (ii) in improved techniques, and (iii) in the vast areas of marginal land which includes land already worked.

---

(27) See "Far Eastern Economic Review", 5 April, 1962. p. 23.

(28) See I.T.C., "Report on the World Tin Position for the years 1965 to 1970". pp. 55-56 & p. 85.

Non-Malays are prohibited by law from holding land in areas which have been set aside as Malay Reservations, and since Malays have not hitherto interested themselves in mining, these Reservations have been virtually closed to the mining industry. Many of the reservations lie within or adjacent to established mining areas and the geological indications are that some of them are mineralized. Government as part of its National Land Policy and in accordance with its policy of encouraging Malay participation in the mining industry, has now decided that these Malay Reservations must be prospected. Funds have been allocated for scout boring and the Mineral Investigation Drilling Unit of the Department of Mines has already begun work.(29) The programme calls for the Scout prospecting of some 181,000 acres of land at an estimated cost of Malayan $ 500,000. Half a million dollars is not a very great sum where mining land is concerned, and if even a small success is achieved this money will have been well spent. It is likely, moreover, that the Malay Reservations will provide a very considerable increment to the nation's reserves of tin ore.

Government has also given a lead to the industry in the matter of improving techniques. In 1951 a Research Division was formed within the Department of Mines. It is located at Ipoh and its very well equipped laboratories have concentrated efforts on (i) the improvement of mining methods, particularly among the small scale operations; (ii) the improvement of mineral recovery techniques and (iii) ore reserves.

It had been generally suspected that the methods of mineral recovery in use in Malaya left much to be desired, and some of the larger companies have

---

(29) Ibid. p. 85.

been working on the problem for some considerable time. The work of the Research Division confirmed the suspicion that serious losses were being suffered, and attention was immediately given to designing a treatment plant to eliminate the losses.

The answer turned out to be a system of jigging combined with thickening of the "pulp" by hydro-cyclone plants" and will probably replace the traditional Chinese palong.(30) They are particularly effective in recovering the fine size ranges to tin ore almost invariably lost on a palong. They have been adapted to dredging and it may well be that the constantly high grades are due to this innovation.

It is inevitable that with this new technique ground considered unpayable in the past must again receive attention, as must also ground worked by the less efficient methods of the past. There is an extensive acreage of such land, for Malaya has been mining on a large scale for nearly a century, and if even a fraction of this land proves workable again it will be a significant addition to the country's reserves.

The industry may also take encouragement from the fact that, in its Rural Development Plan, Government has recognized that it is false economy to allow mineral deposits to be blanketed by other development. It is a statutory requirement that before an area is approved for development the Chief Inspector of Mines and the Director, Geological Survey, must jointly certify that "they have been adequately consulted on the area and no economic minerals appear to be included".

No purpose is served by attempting an estimate of Malaya's remaining reserves of tin ore, for such estimates are invariably proved wrong in the

---

(30) Ibid. p. 59.

course of time. If prospecting is continued, if marginal areas are reviewed and if recovery methods are improved, it is safe to say that tin mining will play a major part in Malaya's economy for many years to come.

Next to tin, iron ore is Malaya's main mineral product, (see Chapter III). But its importance to the Malayan mining industry and the prospects of its future development must not be over-emphasised. Its development became significant only during the last few years. The development is hindered by a narrow domestic market. Apart from a few hundred tons a year used in tin mining, little, if any, iron ore is used at all in Malaya. The consumption of pig iron too is relatively small. The lack of a substantial domestic market and the absence of coking coal in the country remove any possibility of a steel industry being established in Malaya. Today, as it was before the war, the iron mining industry is dependent upon external markets, particularly Japan.

As we have mentioned in Chapter III, the most important producer of iron ore is the Bukit Besi mine in Trengganu and the new mine in the Rompin District of Pahang.

These two mines between them possess proved reserves estimated at 55 million tons, 25 million tons in Trengganu and 30 million in Pahang. The Trengganu mine is currently producing a little over 2.5 million tons a year and the Pahang mine is capable of producing at the rate of 3 million tons a year. Thus, a minimum output of 5.5 million tons a year seems assured for the next 10 years from these two sources.

The reserves position of the smaller mines is however precarious, on the whole. According to departmental data, seven mines in Perak, the five mines in Kedah, the five mines in Johore and one in Trengganu, are all expected to

exhaust their reserves within the next few years, a loss in output of over 1.5 million tons. In six years' time there are likely to be only six of the mines, working at the end of 1962, other than the two large ones, still in operation. These account for some 600,000 tons annually with sufficient reserves for at least another four years.(31) Thus, given an economic price level, it may be assumed that presently working mines will be able to keep production at over 6 million tons a year level.

Now there is the question of potential mines, which may become producers within the next few years, and for which mining schemes have been prepared or are in preparation. These number 27, with aggregate estimated reserves of nearly 16 million tons of ore. These are all small projects, only three having estimated reserves of 1.5 million tons each and six others with 1 million tons or more each. However, it can be assumed that the output from these mines will go a long way towards replacing those mines which will exhaust their reserves within the next few years. It now becomes apparent that with the potential of the large Rompin mine, Malaya should have no difficulty in maintaining an iron ore production of over 6 million tons a year for a decade ahead.

But what will be the position at the end of ten years, say, the end of 1972, when all the existing or potential mines will be near the end of their lives? Prospecting is continuing all the time. The most promising area is in the Mukim of Bera, in the Temerloh district of Pahang. Here, in a remote

---

(31) Data are obtained from the Ministry of Commerce and Industry, Research and development board of tin industry, and the Ministry of Rural Development, Geological Survey Department, Federation of Malaya.

jungle-clad corner of the State, an airborne magnetometer scintillator counter survey carried out from 1956 to 1957 recorded anomalies which in 1960 were followed up by geophysical investigations.

The results proved so good that the Government published the result of investigations made by the Geological Survey Department. The geophysical prospecting team confined its investigation to only one-fiftieth of a square mile, where the existence of several million tons of high grade iron ore containing 66 to 67 per cent iron was revealed. In consequence the Geological Survey Department has recommended that a 30-square mile area should be prospected.

However, those who have been forecasting an early demise of the iron mining industry appear to be unduly pessimistic. Although the emphasis on mining locations may change, there should be enough ore available to keep up the present rate of output for at least another ten years. After that, in the absence of further proof of large new deposits, a decline may be expected. It would seem unlikely, therefore, that the future development of the mining industry of Malaya could depend very much upon iron ore production.

Nevertheless, additional geological work and prospecting are required to determine whether the known widely scattered deposits are interrelated and whether there may be other deposits.

Among the other mineral products, bauxite is one of the important products. Mining of bauxite in Malaya commenced in 1936, in which year 36 tons were produced. In 1962, 349,419 tons were mined and exports, mainly to Japan, earned M$ 314,857. Output reached a peak of 451,958 tons in 1960, and declined to 409,881 tons in the following year.

Bauxite deposits have been found in several localities scattered over the country, including Malacca, Trengganu, Pahang, and Selangor.

At present, the only larger mine of bauxite is situated at Telok Ramunia, Johore, where proven reserves are placed at 4 million tons of washed bauxite of an average Al_2O_3 content of 50.7 per cent. The other mine is at Pendas on the southern coast of Johore, where reserves are estimated to be 1 million tons. In addition to these proven reserves, the possible reserves in Johore are estimated at another 4 million tons, making total estimated reserves of 9 million tons, or sufficient to maintain the current rate of output for another two decades at least.

Export demand has governed the rate of production. If expectations of increased demand in the near future from both Japan and Taiwan materialise, output may increase substantially. In addition to Japan and Taiwan, Malayan bauxite has been shipped to Australia, Germany and in small quantities to Thailand.

During 1962 the quality of the export grade has been improved by the installation of a beneficiation plant to serve both the Johore mines. Should the export demand improve substantially it is to be anticipated that the known deposits in other parts of the country will be further investigated with a view to determining their commercial potentialities.

Prospecting for new deposits will probably be encouraged by the findings of an investigation now being conducted into the causes of the formation of bauxite deposits in Malaya which hitherto have not been fully understood.

The bulk of the known deposits are in undulating country and are confined to cappings of hills not more than 200 feet above sea level. These cappings, up to 24 feet thick are usually overlaid by concretionary laterite under superficial humus layers. At Bukit Pasir, Batu Pahat, Johore, bauxite zones are interbedded in marine sediments.

Other mineral products including ilmenite, gold, columbite, coal, copper, tungsten, manganese, monazite, zircon and china clay, are of little significance of Malayan economy.

However, the prospects for developing a major mineral industry in Malaya in addition to tin mining are not encouraging. This does not imply that the country is incapable of increasing its output of other minerals. Tin has been given priority and relatively little attention has been directed to the prospecting and development of other minerals. Large areas of the country have not been thoroughly prospected, due to inaccessibility and difficult terrain. But much of Malaya, insofar as it is known geologically, is underlain by granites, which are not usually favourable for the occurrence of metaliferrous mineral deposits.

Prospecting in most parts of Malaya by ordinary visual means is exceedingly difficult. Rock outcrops are rare and jungle covers large areas, making accurate geological mapping by ground traverse methods difficult and slow. There has not been sufficient geological work to indicate rock relationships, which might be a clue to potential prospecting areas.

Most of the minerals produced in Malaya are obtained as by-products of the tin-mining industry, or are being produced under the stimulus of world emergency demand. For the most part deposits are small, and, with the possible exception of iron and bauxite, do not permit large and low-cost production over an extended period of years. The country itself has only a small metal-using industry and in world markets Malayan minerals face competition from sources closer to the major industrial centres. For these reasons, Malaya's mineral strength must continue to rest on a strong, healthy tin-mining industry.

In addition, the geological survey in Malaya should lay special emphasis on the discovery of mineral occurrences, the delineation of mineralized areas, and the location of economic mineral deposits. Although general and detailed geological mapping contributes largely to an understanding of the distribution of the mineral occurrences, and is an initial requisite, it is usually necessary to undertake more intensive investigations in order to elucidate the origin, mode of occurrence, and structure of the ore deposits.

Fisheries. Malaya's marine fisheries, which gave direct employment to some 53,000 men in 1962, can be helped to offer more employment and better income. This is particularly important for families on the East Coast. Insofar as the training of fishermen is concerned, the two Marine Fisheries Schools at Glugor, Penang, and at Kuala Trengganu are signs of progress.

Much could be done to encourage the use of mechanical and communications equipment for the fishing fleet. Equipping marine fishing craft with diesel engines or outboard motors has proceeded to the point that by 1962 some 44 per cent of the 22,183 registered boats had engines. Fishermen would be helped by supplying their boats with two-way radio equipment. Improvements in the commercial preservation of fish by refrigeration, canning, salting, drying and smoking offer opportunities on both coasts. Again, there are commercial opportunities for supplying all the necessary equipment.

Fresh-water fish have become more and more important as a source of valuable animal protein in the diet of the rural population. This is especially important in districts where salt-water fish are not available. The stocking of rice padi fields with Tilapia and Tawes, and the rearing of Chinese Carp, Valui and Sepat Siam, and Indian Catla in drainable ponds and old tin mine pools are contributing additional income to small family farms without much labour.

However, it is obvious that salt-water and fresh-water fish play an important part in supplying the needed animal protein in Malaya and in the economic life of the nation. Emphasis has properly been placed on research in fisheries and on educational programs designed to train farmers to produce more fish and to train commercial fishermen in making larger catches and processing and marketing their products.

[illegible] (32).

In some areas, such as the production of fresh-water prawn, the applied research is far enough along in producing the needed knowledge that a pilot demonstration project is the next logical step.

Construction of fish cold storage, processing and marketing centres on the East Coast offer the opportunity to establish a research program. This research should include market evaluation as well as freezing, smoking, salting, filleting, and the like. The fishermen should also be encouraged to form themselves into Associations or Co-operatives in whatever form and with whatever constitutions may be considered the best. Consideration should be given to the provision of adequate advisory and supervisory staff whether under the Department of Co-operative Development or otherwise, since

---

(32) See K. P. Ang, "Report on the Prawn Pond Industry in Singapore" 1963 (in Chinese). Some of the mangrove swamp areas of Singapore have been used for prawn, shrimp and crabs cultivation for more than 60 years. This is shown to be one of the most beneficial forms of land use in certain parts of the swampy area in Singapore. See also Chapter three. It may be asked why some parts of the swampy area in the Federation should not be developed for this industry.

these Associations will for the most part lack that degree of satisfactory leadership without which they cannot hope to survive. It should be noted that until Governmental control of marketing has been established in some form, such Associations can be of great assistance in providing co-operative resistance to the exploitation suffered at the hands of middlemen.

A comprehensive long-range development program should include improvement of unloading places and shore facilities at many points throughout Malaya. Further research should be emphasized on both salt and fresh-water fishing. Such research should involve the aspects of production, transportation and distribution.

It has become increasingly obvious in recent years that the waters adjacent to Malaya have been fully exploited. Thus the future of the fishing industry seems to lie rather in the development of capital-intensive deep-sea fishing and the reduction of the existing coastal fishing population to considerably smaller numbers of the most skilled men operating with improved equipment and techniques, rather than in an expansion of employment opportunities. For the peasant population as a whole, their type of sea fishing offers no prospects of a total increase in productivity, and increasing standards of living for the fishing section of the rural population are likely to be achieved only if the offtake into other sectors of the economy considerably exceeds the rate of natural increase of the population.

Forestry. This is the fifth most important industry in the total value of product in the Malayan economy. At present, the productive forest and the protective forest total 26 per cent of the land area of Malaya.

The Forest Department, after assessing the probably future needs of the country, has recommended that productive forest should be increased from 8,000

to 12,500 square miles. It has been known for many years that Malaya could not support itself indefinitely in timber if it had always to depend on virgin forests where yields were comparable to those being exploited today. Therefore, the Forest Department has to develop a method of converting the existing low-yielding natural forests to a yield four or five times as great. This has been successfully done, but the process which takes place as the original trees are exploited for timber requires time because the growing of the new trees takes something like seventy years.

Assuming present rates of growth, Malaya will have a population of 28 million in 70 years' time, and an actual shortage of timber could easily occur. It is believed that this will almost certainly happen, and that it will do so at the turn of the present century. If the danger facing Malaya is that the demand for timber will outstrip the growing of the new tree crops, it follows that the most effective defence against it is to set about growing the new crops as rapidly as possible in those Forest Reserves which have already been dedicated to that purpose.

The ideal way to deal with this matter would be to cut the whole of the present annual timber production of roughly one million tons from 100,000 acres of Forest Reserves and, in the process, to grow 100,000 acres of new timber ultimately yielding four million tons. An annual cut of this size is also just what would be ideally required with the permanent forest estate of 12,500 square miles, that is to say the present moment is theoretically one where there could be a convenient balance between timber consumption and the regeneration of forest reserves. In practice this is not attainable because of the existence of large areas of forest on State Land destined for future agricultural and other developments. The time has long since passed when

timber could be burnt to provide land for development, and it is necessary nowadays to ensure that all usable timber is removed from State Land before it is alienated and the forest destroyed. This means that State Land must continue to make its contribution to general timber production until the last of it is alienated.

By far the greatest proportion of the valuable forests are at the lower levels, below 1,000 feet elevation, and extensive forest reserves have accordingly been established at this elevation in all the States and Settlements. It is probable that the size and number of reserves in the lower elevations will have to be reduced appreciably over the next few decades, to make way for agricultural development. The objective should be to assure the maximum return from the reserves consistent with agricultural development needs, and this demands a planned completion of exploitation of the reserves and conversion of the residual forest to agricultural uses. It is therefore most important that the Federal and State and Settlement Governments determine the basis of selection for reduction or elimination of reserves and the necessary schedule for exploitation.

To make up for the losses in timber potential, the Hill and Upper Dipterocarp reserves, between 1,000 and 4,000 feet elevation, will have to be utilized on a planned basis and subsequently regenerated. The best methods of exploitation and the most economic means of extraction should be studied in the near future.

The montane forest reserves at the higher elevations, are of little economic value because of the small size and tortuous form of the trees.

Certain works toward the expansion and more effective utilization of forest resources have been carried out by the Forest Department, namely,

(i) maintenance, protection, and replanting in the present forests; (ii) road construction, making the forests accessible, and (iii) expansion of uses for tropical woods through research and through sales promotion.

For example, the Forest Research Institute at Kepong has a major section dealing with forest product research. This section conducts research work in timber mechanics, wood working, wood seasoning, wood preservation, composite woods, and wood chemistry including evaluations as to pulping possibilities. The section was well-equipped when it was first established. It has a physical plant adequate to produce some useful research results. However, the increasing importance of composite woods, wood by-products, and wood pulps, and the opportunities for utilizing a much larger volume of Malaya's wood demand and intensification and expansion of research in forest product utilization. This will require additional experienced personnel, equipment, and a re-orientation of effort.

Moreover, considerable research on conservation and production problems which is being done by the Forest Department should be supported on an increased scale. Progress in finding additional commercial uses for Malayan forest products and possibilities for more extensive propagation of commercially useful timber varieties would be of great significance for the economy in view of the very rapid rate of tree growth in the Malayan environment. This warrants continuing research emphasis on silviculture, botany of forest trees, entomology and pathology as well as studies of timber mechanics, durability, preservation, technology and chemistry.

Entrepot Trade. In terms of gross value of trade, entrepot trade accounts about half of the total trade of Malaya. "About 90 per cent of this trade is conducted in Singapore, and very nearly all the remainder in Penang." From

the point of view of Singapore and Penang, the entrepot business includes also the movement of goods to and from the Federation; about three-quarters of Federation trade regularly passes through these two ports, Singapore having a somewhat larger share than Penang.

During recent years, the main difference between the composition of the Federation entrepot trade and that of Malaya as a whole is the importance of tin. In 1960 for example, of all imports of tin into Malaya, 95 per cent went direct into the Federation; tin accounted for 38 per cent of the Federation's approximate entrepot trade but only for 6.4 per cent of the approximate entrepot trade of Malaya as a whole. The rise in the proportion of Federation entrepot trade to total Malayan entrepot trade since 1959 is explained principally by the recovery of the tin trade in 1960 - total tin imports into Malaya were M$ 58 million in 1959 and M$ 142 million in 1960, almost all of which in both years went into the Federation. In addition, the proportion of rubber imports which went to the Federation rose from 8 to 12.6 per cent.

It is also important to point out that before 1963, Indonesia was the most important entrepot trade partner with Malaya. But none of Malaya's net exports goes to Indonesia and the only significant net import from Indonesia is petroleum. It is estimated that in 1960 about 54 per cent of the Malayan approximate entrepot trade had Indonesia at either the import or the export end, usually the import end. In such circumstances, any change in trade relations between these two countries in future will affect the effectiveness of the Malayan economy, especially of Singapore's economy.

For many years, the entrepot trade was one of the main economic activities of the original Straits Settlements, and today it remains the largest single

source of income and employment in Singapore and in Penang. Although important year-to-year fluctuations have taken place, the entrepot trade has grown in importance since the early 1950's. It is difficult at the present time to determine what are the prospects of that type of trade in the near future.

On the one hand, industrialization will lead to increasing imports of capital goods into neighbouring countries and the favourable location of Singapore may encourage its use as a regional centre for stocking and distributing traded goods, and more particularly the numerous spare parts and components which it would be more costly to store in each country of destination. On the other hand, there is a growing tendency on the part of neighbouring countries to rely less on Singapore as they organize their import and export trade by means of direct shipments, produce locally many consumer goods which they used to import from abroad, and improve the methods of grading, processing, and shipping their export products. The role of the entrepot port as an intermediary between neighbouring countries and the rest of the world is therefore highly dependent on the policies followed in those countries, and on the changes in the trade channels; this is particularly true of Singapore and Penang whose trade is predominantly with two groups of countries, Malaya and the Borneo States on the one hand, and Indonesia on the other. In these circumstances, it would not be advisable to base economic policies on the assumption of a rapid expansion of the entrepot trade, but rather to adopt a policy designed to maintain the existing trade channels and to avoid any unnecessary impairment of that trade.

At present, the entrepot trade in Singapore and in Penang enjoys practically unlimited freedom from customs formalities; only in the case of a few dutiable products such as tobacco, alcoholic beverages and petroleum products, does

the customs administration exercise any significant control; for all other goods, the traders may import, store, break bulk, and export without any interference from the customs authorities. Recently, protective duties have been introduced in Singapore in the case of soaps and paints and about 30 further applications for protection are now under consideration. In view of the determination of the Singapore Government to pursue a policy of rapid industrialization, it is likely that, for a growing number of items, the traders will have to adapt themselves to the discipline of customs regulations and that the freedom from customs formalities will cease to apply in several sectors of the entrepot trade. The proposed establishment of a Malayan common market will accelerate this process since, to enjoy the benefits of regional integration, Singapore will have to apply the common protective tariffs whether or not the protected products are made in Singapore. It is imperative to devise and put into force adequate arrangements to protect the entrepot trade from being adversely affected by such developments.

However, the problem is particularly difficult for Singapore. Because of the absence of customs formalities, and of the organization of loading and unloading operations in the port of Singapore, the entrepot trade is not concentrated in a small area, as in many trading centres; the goods imported for re-export are stored throughout the commercial quarters of the city, in godowns or in shops. The import and export trade is not in the hands of specialized firms, but a large part of the export transactions are conducted by semi-wholesalers or even retailers who are also active in the local market. The fragmentation of the trade, as well as the traditional methods of operating which are familiar to the majority of traders, will make it more difficult to introduce methods which do not create any problem in other countries (e.g. U.K. in 1932). These exceptional circumstances will require the development

of special arrangements which are not found essential elsewhere, and will lead to a longer period of adjustment than would normally be necessary.

For these reasons, the International Bank mission (1963) has suggested that the only practical solution consists in the establishment, in the very near future, of free zones in Singapore and Penang. In these free zones, the importers and the traders would have at their disposal the necessary facilities to store the goods destined for re-export and to deal with the unpacking, repacking and other handling operations without any interference by the customs authorities.(33)

Summary

Diversification has often been prescribed as a cure for the instability of the Malayan economy due to its dependence on the world markets for rubber and tin. The clamour for diversification becomes vigorous whenever there is a slump in these commodities. In the 1930-33 depression, for example, there was a general tendency among the public and officials to deplore Malaya's dependence on the two export industries.

Discussions of Malaya's unbalanced economy have again become prominent in recent years. Until the Korean war boom, the two export industries were in a precarious condition, partly owing to the competition of synthetic rubber industries and the slackening demand for tin. After the Korean war boom came the recession of 1953, which again produced a spate of discussion and clamour for the diversification of Malaya's economy.

The objectives of diversification have, however, seldom been clarified by critics of Malaya's dependence on rubber and tin. Some argue in favour

---

(33) See I.B.R.D. "Report on the Economic Aspects of Malaysia", pp. 86-89.

of diversification on the grounds that they will increase productivity, others that they will promote stability, and still others that they will achieve both. Yet there is no guarantee that diversification can achieve both these objectives simultaneously.

One of the great advantages of Malaya's dependence on the world market is the relatively higher standard of living enjoyed by the people as a result of international specialisation. It is generally agreed that the standard of living of all classes in Malaya is far higher than in India, Ceylon or the rest of the South-east Asian countries.

But the increase in productivity was achieved at the expense of economic stability. The fundamental problem of the Malayan economy is in fact one of reconciling stability with higher productivity. It is by no means certain that diversification can solve this problem. Any scheme of diversification which aims at increasing the standard of real income in Malaya must involve production for the export market, in view of the smallness of the domestic market. But such a dependence must continue to expose the economy to the fluctuations of world demand.

Before the war, the Netherlands East Indies were often referred to as examples of territories which enjoyed the advantages of a diversified economy. Although manufacturing activity in these territories was still on a small scale, agriculture was highly diversified, covering a wide range of tropical products, which were not only used for home consumption but also exported. Diversification in agriculture, however, did not protect the Netherlands East Indies from the effects of an unstable world market for primary commodities. During the world slump of the early 1930's the plight of the Netherlands East

Indies was in fact as bad as that of Malaya and Ceylon.(34)

Diversification in the sense of cultivation of more crops or production of more commodities for export would not therefore reduce the effects of a general slump, although, if individual commodities fluctuate the existence of diversified production may cushion the economy against a slump in the prices of one or two products. On the other hand, if diversification takes the form of production for the local market fostered by protective measures, there will be no increase in productivity. This might, to some extent, lessen the effects of instability in the demand for export commodities, but it must be remembered that this advantage is achieved at the expense of increased productivity. In short, against the gain of greater stability must be set the loss of the greater productivity derived from specialisation.

This discussion of the conflict between the objective of higher productivity and greater stability shows that diversification alone is by no means an adequate remedy for the weaknesses of the Malayan economy. There is no doubt that in the development of a diversified economy, priority should be given to the objective of increasing productivity. Owing to the smallness of the home market in Malaya, the development of export industries provides a much greater scope for the achievement of this objective. Diversification which aims at increasing productivity must therefore not fail to take advantage of the opportunities of production for export. It is true that diversification in this sense will increase Malaya's dependence on the world market and hence will be a source of instability. The remedy for such instability, however, lies in the application of international schemes of commodity stabilisation

---

(34) See P. T. Bauer, "The Rubber Industry" (London, 1948) pp. 21-24.

and not in abandoning the advantage of international specialisation. Malaya's economic future will continue to be bound up with the prosperity of her export industries, and hence it is desirable that measures should be taken not only to promote the development of new export industries but also to improve the efficiency of the traditional rubber and tin industries.

It is true that in addition to the development of export industries, there is room for increasing the range of commodities produced primarily for the home market. Such industries must necessarily be on a small scale, owing to the smallness of the local market, but even here there is scope for contribution to some increase of productivity by the application of better technique to existing industries and by the training of specialised skill to enable the development of new industries. The development of such industries is a contribution to increase productivity, because they enable the workers to earn relatively higher incomes by using more efficient methods of production and by the acquisition of specialised skill. Secondly, they provide additional opportunities for employment of labour. This is a vital consideration in Malaya where the labour force is expanding because of the rapidly increasing population. Thirdly, such industries are more stable than the export industries, because they are dependent on the home market and not on the world market. Their development will therefore help to cushion the economy against the effects of fluctuations in the world market.

The primary aim of economic development in Malaya including the development of a diversified economy must, therefore, be to increase productivity either by the application of improved technique in existing branches of agriculture and industry or in the cultivation of new crops or the development of new

industries, which enables workers to be upgraded to more remunerative employment, and to improve the living standard of the country as a whole.

Conclusion.

"In common with most of the underdeveloped countries, Malaya has an economic structure built on the production and export of primary raw materials, of which the most important are rubber and tin. Agriculture and mining form the main supports of the national economy, with forestry, fishing, small-scale manufacturing and trade occupying secondary positions."*

The basic agricultural problem of Malaya is one of lopsided development. With roughly 60 per cent of total cultivated land given over to the production of rubber, the fortunes of this crop on the world market have a preponderant effect upon the local economy. This situation is coupled with the fact that Malaya produces less than two-thirds of its rice needs and is also deficient in the production of some other important foods. This quasi-monocultural pattern afforded only limited cause for anxiety in the pre-war years when the impregnable role of natural rubber in world industry was taken for granted. During recent years, however, the long-run outlook for natural rubber has undergone a significant change. Furthermore, the world rice shortage during the Korean war period emphasized the deficiency of Malayan output. These two developments have profoundly affected local agricultural policy and have set the tone for the development now being undertaken.

Due to the high returns from rubber and tin exports, Malaya has been able to bridge the food requirement gap through imports. The future outlook provides no assurance that adequate foreign exchange for this purpose will always be forthcoming or that foreign supplies will always be available. It is not a question of attaining self-sufficiency. The fundamental problem is to provide for a more stable equilibrium by narrowing the gap between production and requirements.

---

* See Ooi Jin-Bee, 'Some Aspects of Peasant Farming in Malaya'. (1965).

The instability of the economy has clearly been much influenced by the fluctuation of natural rubber prices. For example, the high incomes during the Korean war boom are obviously related to the high rubber prices during the same period.

About one-fifth of the income in Malaya, or one-fourth of those in the Federation, taking good years with bad, are directly derived from rubber. The direct effect of a 4 per cent rise or fall in the price of rubber would therefore be a 1 per cent rise or fall in the gross national product of the Federation. There may, however, be indirect effects: there may be substitution, increasing the proportional effect of a price rise, by attracting factors of production away from other outputs now less advantageous than rubber, and reducing the proportional effect of a price fall by driving factors into other uses; there may be multiplier effects, with local wages or employment or both in other occupations, rising or falling with rises or falls in the rubber price, as a result of inflationary or deflationary pressures. But further research is needed since none of the international schemes for rubber industry has been successful to date.

In the meantime, [illegible] to reduce the effect on national income of fluctuations in the price of a single export, agricultural diversification is also important.

The Department of Agriculture is trying to broaden the economic base by developing [illegible] cash crops other than rubber. Efforts to improve yields and expand acreage of some export crops such as coconuts, oil palm and pineapples are being energetically pursued. Although the prospects of the coconut

industry are not bright, due to the large areas planted with this crop, a replanting scheme has been carried out by the Department of Agriculture in order to improve the yield of the crop.

Oil palm on the other hand is much more promising than other crops. But the production of high quality oil and the attainment of maximum extraction rates is something which can only be attained with a certain amount of capital equipment, and, the minimum cost throughout is also substantial. Furthermore, a high technical standard is required of the staff and management. In such circumstances, if smallholders are to be encouraged, it is necessary to provide them with controlled credit, technical assistance and management, processing and marketing facilities.

However, in popular discussions of the need for the diversification of the economies of the countries in underdeveloped areas, the tendency has been to prescribe diversification as the solution to the problem of economic instability arising from the dependence of export economies on a fluctuating world market. The objective of the policy advocated is to increase the range of production for the home market and cushion the economy against the effects of price fluctuations in the export market. But it is seldom appreciated that diversified production for the home market as a substitute for specialised production for the export market would involve a loss of productivity and a deterioration in living standards.(1) Malaya has been able to achieve a relative high level of per capita income largely because of her specialisation in the production of exports for the world markets. The abandonment of her export

---

(1) See Eugene Staley, "The future of underdeveloped countries", Harper & Brothers, New York, 1954, p. 294; see also President's materials policy commission, "Resources for freedom", Vol. 1, p. 73.

industries in favour of production for the home market would result in a serious fall in her national income.

It is true that the production of rubber and tin for export has led to the lopsided development of the Malayan economy. But the case for a more balanced development through diversification does not imply the inevitable abandonment of specialised production for export. The objective of diversification from the point of view of a balanced economy should be the complementary development of a wider range of production for both the home and export markets. Such a policy would ensure that diversification is not achieved at the expense of increased productivity. This is undoubtedly the basis of the recommendation of the International Bank Mission for a programme of raising the productivity of the Malayan natural rubber industry on the one hand and for diversifying Malaya's agriculture and industry on the other.(2)

It cannot be ignored that the prospects for economic development in Malaya are deeply affected by demographic factors, more especially by a high and mounting rate of population growth, by the increase of the labour force, and by a bottom-heavy age structure. The rate of population growth in Malaya is nowadays little disturbed by external migration; the country no longer receives large numbers of immigrants from India and China. Population growth is now chiefly a function of a high rate of natural increase of a little over 3 per cent. If these rates remain as they are, the total population is estimated likely to have doubled in twenty-five years. In terms of capital these high rates of natural increase are expensive; it is being forced to save up to about 12 per cent of their national income merely to cope with the additional population

---

(2) See I.B.R.D., "The Economic Development of Malaya", p. 22.

without achieving any increase at all in the average standard of living.(3) Indeed, one of the chief problems in the country today is how to ensure that the benefits of economic development are not swallowed up by a too rapid growth of population.

It has been recognised that the problem of widespread under-employment in the rural and the unemployment in the urban areas are becoming more serious than ever before. The highest rates of unemployment are among persons 15-19 years old, with persons 20-24 years old next.

For the future, the task is to create jobs for the unemployed and more work for the under-employed, in addition to replacing any present jobs that disappear, and providing productive work for the many new workers entering the labour force each year as a result of the rapid increase in population. The Statistics Department recently estimated that all these needs add up to a requirement that, through the remaining years of the 1960's, the total number of jobs should increase by an average of about 3.75 per cent a year. In the next few years the rate should be even higher, in order to make early progress in cutting the number of unemployed persons. Still, the largest part of the need for additional jobs comes from the high rate of population growth. This need will continue as long as population increases, except as higher living standards may reduce the proportion of the population seeking employment.

Nevertheless, numbers of jobs are only part of the problem. The other task is to raise progressively the production of those who are employed, even though such progress also eliminates some jobs. Each job must be made to count for more output. This means raising productivity in all kinds of jobs.

---

(3) See Lim Tay Boh, "Problems of the Malayan Economy", p. 99.

It also means gradually moving workers away from jobs that cannot be made productive enough, into jobs that yield more results for a person's effort.

[redacted]

The theoretical burden of child dependency is in practice lightened by the low age at which children enter the effective working force. For this reason, a large family is frequently regarded as an economic asset. But there is no doubt that the high proportion of children in the total population* does limit capital formation, already made difficult by the high rate of population growth. The needs of the whole community have to be satisfied by a small working population so that little is left for the purposes of investment.

Though the ratio of dependent to economically active persons is high, there is no widespread shortage of labour. On the contrary, underemployment is a characteristic feature of Malaya as well as in most of the underdeveloped countries. In so far as the problem of labour supply is quantitative, it is not that there are too few economically active persons available, but that there are too many to be supported by the economic structure, weakened as it is already by the rapid rate of population growth and by the high ratio of child dependency.

The high rate of increase of population is the fundamental problem to be tackled. Time and a decreasing rate of population growth will bring about a more normal age structure. The prospects of reducing the rate of natural

---

* More than 43 per cent of the Malayan population are under the age of 15.

increase by birth control measures seem slight. They are for long unlikely to be effective in comparatively backward areas where educational and economic standards are still low, and cultural, particularly religious, prejudices are difficult to overcome. A more practicable approach is to increase the rate of production over the rate of population growth. The emphasis here, however, is on industrialization and the intensification of agricultural production.

McHale[4] has pointed out that "Malaya is without fossil fuel resources and the hydro-electric potential near settled areas is also small. Mineral resources other than tin and modest amounts of iron and bauxite are absent, and with some limited exceptions one can also state that the tropical soils of Malaya are relatively poor and tree crops are usually the only ecologically safe crops."

"Malaya does possess large forest reserves; in the immediate years to come these will undoubtedly become one of the major sectors of development in the economy although the basic questions of conservation practices versus commercial exploitation remain to be resolved. The fishing industry has also some expansion potential but plankton counts are low in most Malayan waters with the result that fish populations are not large and near shore waters. Pond culture and deep-sea fishing are the most promising areas of development in the industry. The livestock industry has never thrived in Malaya because of the poor quality of grasses and other reasons. Large-scale expansion in this realm does not seem to be in the offing."

"By the process of elimination, industrialization appears to be the only alternative that can, potentially, provide the necessary and desirable income

---

(4) See T. R. McHale, Op. cit. and 'Malaysian Economy in transition'. PP. 10-12.

generation over time and the labour absorption capacity that is required by expanding population and labour on the one hand and the contraction of opportunities in the traditional sectors of the economy on the other."

For Malaya has not industrialized in the past, since the comparative advantages of labour, land and capital factor used in the rubber-tin-entrepot complex were so great and the competition from imported manufactured goods so intense that it just did not make economic sense to go into industrial manufacturing activities. Although institutional and attitudinal rigidities will prevent some changes from taking place, it is already apparent that the comparative advantages in much of the traditional sectors of the economy are no longer as great as they were and that alternative uses of factors are becoming more attractive. Thus, market forces themselves will increasingly operate to make industrial activities relatively more attractive than they have been.

Nevertheless, it is highly likely that if industrialization is to proceed at a rapid rate, it will depend to a substantial degree on government attitudes and actions. Of all government policies designed to promote development, the [redacted] use of tariff protection in Malaya is perhaps the most critical. If the presently distinct customs areas are made one unit for the purpose of protecting industrial producers within Malaya, it is highly likely that the pace of industrialization will increase at a rapid rate. At the present time, the imposition of tariffs in any one of the distinct customs areas usually does not provide a protected market area sufficiently large to attract industrial enterprises which must scale their operations above a critical minimum size. The problem, of course, is both an economic and a political one. Yet the conclusion is inescapable that for a protected Malaya-wide markets for local manufactures are probably both necessary and inevitable

in the Malayan development process. Better still, to establish a region-wide common market is most desirable for the development of industrialization. For the gains from economic integration will come from attracting new investment, especially foreign investment. At the same time, if the scheme is economically sound and avoids undesirable expansion of protection, each country's development will be propelled in the direction that is to its advantage: the composition of its output will shift toward specialization in products in which it can hope to be an efficient producer.

In addition, in the interest of Malaya, as well as of the industries which may wish to establish themselves within its market, it is essential that the existing activities of entrepot trade should be encouraged and safeguarded. Disregard of their requirements would only destroy the favourable effects which new industry may have on employment, and impair the market for its products.

Finally, it should be emphasized that in order to ensure a satisfactory rate of growth in incomes and employment, it is essential that new industries and further development of agriculture, transportation, public utilities and basic social services, including education of all kinds, especially technological education should be encouraged. But the extension of educational facilities must essentially be a long-term commitment and cannot be expected to make its effects felt in the short run in an acceleration in the pace of economic growth.

Appendix I. Malayan Migration Statistics (1931-1958)
(Net immigration (+) or net emigration (-)).

thousands

Year	Chinese	Indians	Malaysians *
1931	-113.0	-70.6	-3.1
1932	- 97.5	-59.6	-4.0
1933	- 31.2	- 7.4	+0.3
1934	+ 61.6	+73.8	+3.4
1935	+ 91.0	+36.9	-3.1
1936	+ 75.8	+10.0	-4.3
1937	+180.5	+89.6	-3.9
1938	+53.2	-20.1	-5.7
1939	+14.3	-11.1	-8.6
1940	+ 3.3	- 7.6	-4.9
1941 (Jan.-Oct.)	+ 6.6	- 8.3	+6.5
1947	- 3.7	- 8.4	-
1948	- 2.4	- 0.9	-
1949	- 9.2	- 0.6	-
1950	- 1.4	+ 7.4	-
1951	-10.9	+ 6.3	-
1952	- 5.5	+13.0	-
1953	- 1.6	+19.3	-
1954	+ 1.2	- 0.3	-
1955	+ 2.8	+ 3.1	-
1956	+ 5.3	+ 6.0	-
1957	+ 2.5	+ 5.7	-
1958	+ 3.2	+ 3.2	-

* Mainly includes Javanese.

Source: Federation of Malaya, "Population Census 1957" (Kuala Lumpur, Jan. 1960) p. 17.

Appendix II. Population Density in the Different States of Malaya 1931 and 1947.

		Density per square mile 1931	1947
Western States or Settlements			
	Penang	851	1,116
	Malacca	295	378
	Perak	100	121
	Selangor	168	225
	Negri Sembilan	92	105
	Kedah	117	151
Southern States or Settlements			
	Johore	69	101
	Singapore	1,957	3,292
Eastern States			
	Pahang	13	18
	Kelantan	63	78
	Trengganu	36	45

Source: Malaya 1947 Census Report, Table 4.

Appendix III. Number of Imports and Slaughter animals in the Federation 1954-1963.

Year	Buffaloes		Oxen		Sheep		Goats		Swine	
	Imports	Known Slaughter	Imports	Known Slaughter	Imports	Known Slaughter	Imports	Known Slaughter	Imports	Known Slaughter
1954	2,434	24,647	1,646	36,147	30,294	28,207	214	61,014	2,859	502,152
1955	5,885	32,171	1,816	36,531	41,044	37,993	-	74,681	1,548	563,875
1956	5,733	31,911	1,316	38,968	44,023	36,939	-	80,859	1,699	647,931
1957	4,659	28,482	1,811	41,986	46,787	39,017	592	80,029	20,552	602,841
1958	6,120	26,513	2,168	34,456	48,632	38,409	8,398	86,839	35,582	537,170
1959	8,537	32,576	2,251	35,239	53,301	47,617	5,302	90,586	28,683	606,576
1960	7,812	35,838	1,907	38,097	55,490	52,086	3,697	85,553	40,903	646,459
1961	6,043	38,726	1,563	38,391	60,838	56,290	158	82,625	1,503	672,854
1962	6,038	36,160	1,736	35,486	58,996	60,861	127	76,083	991	741,526
1963	6,034	36,398	1,272	34,533	55,875	55,929	167	70,473	-	752,080

Soutce: Monthly Statistical Bulletin of the States of Malaya, Nov. 1964, p. 20, Table 3.1 & 3.2.

Appendix IV. Output of tin-in-concentrates and employment in tin-mining.*

Year	European Mines			Asian Mines			Total		
	Labour employed	Output	Output per man	Labour employed	Output	Output per man	Labour employed	Output	Output per man
		(long tons)			(long tons)			(long tons)	
1948	21,707	26,034	1.20	25,151	16,368	0.65	46,858	42,402	0.92
1949	22,586	32,977	1.46	24,521	19,592	0.80	47,107	52,569	1.12
1950	22,437	34,036	1.52	24,807	21,266	0.86	47,244	55,302	1.17
1951	21,995	35,805	1.63	23,936	19,412	0.81	45,931	55,217	1.22
1952	21,426	34,952	1.63	23,233	21,207	0.91	44,659	56,159	1.26
1953	19,406	33,777	1.74	17,493	21,657	1.24	36,899	55,434	1.50
1954	19,911	37,409	1.88	19,804	22,438	1.13	39,715	59,847	1.51
1955	20,453	36,414	1.78	19,106	23,740	1.24	39,559	60,154	1.52
1956	20,379	36,102	1.77	19,080	25,094	1.32	39,459	61,196	1.55
1957	19,369	33,800	1.75	17,216	24,420	1.42	36,585	58,220	1.59
1958	13,930	23,332	1.67	9,223	14,279	1.55	23,153	37,611	1.62
1959	13,001	22,644	1.74	10,777	14,252	1.32	23,778	36,896	1.55
1960	17,144	33,506	1.95	12,098	17,516	1.45	29,242	51,022	1.74
1961	18,038	36,243	2.01	14,421	18,746	1.30	32,459	54,989	1.69
1962	17,859	35,987	2.02	15,514	21,343	1.38	33,373	57,330	1.72
1963	17,647	35,862	2.03	16,003	22,439	1.40	33,650	58,301	1.73

* Excluding dulang washing.

Source: International Tin Council various "Statistical Bulletin".

Appendix V. Indices of trade by commodity sections in the Federation.

	1.		2.		3.		4.		5.		6.		7.		8.		9.		10.		Total	
	I.	E.	I.	E.	I.	E.	I.	E.	I.	E.	I.	E.	I.	E.	I.	E.	I.	E.	I.	E.	I.	E.
1954	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
1957	125	106	116	111	151	135	91	132	257	107	154	113	131	146	165	266	135	110	236	189	138	134
1960	132	113	108	44	246	181	130	64	357	98	196	131	150	232	222	321	154	139	238	253	163	180
1961	133	119	116	77	205	147	124	72	368	102	218	146	167	261	263	443	165	155	265	284	169	161
1962	133	130	95	77	246	140	131	85	368	100	209	163	193	284	324	531	177	170	315	288	186	161
1963	156	124	81	133	212	144	133	102	316	105	231	244	192	291	344	541	190	190	307	350	192	166

Notes: The heading numbers in this table are representing the different commodity sections as shown in table 3.20. I = Imports. E = Exports.

Source: Monthly Statistical Bulletin of the States of Malaya, Nov. 1964, p. 90, Table 1.3 & 1.4.

Appendix VI. Classification of Population by locality Size

Gazetted areas with Population	Chinese		Malays		Indians*		Others		Total	
	Persons	%	Persons	%	Persons	%	Persons	%	Persons	%
Gazetted areas with pop. of over 100,000:-										
City of Singapore	709,611	77.8	100,531	11.0	79,962	8.8	22,239	2.4	912,343	100.0
Kuala Lumpur Municipality	195,822	61.9	47,615	15.1	53,505	16.9	19,288	6.1	316,230	100.0
City of George Town	171,245	72.9	26,757	11.4	32,029	13.6	4,872	2.1	234,903	100.0
Ipoh Town	84,319	67.0	19,336	15.4	16,164	12.9	5,951	4.7	125,770	100.0
Total:	1,160,997	73.1	194,239	12.2	181,660	11.4	52,350	3.3	1,589,246	100.0
Gazetted areas with pop. of 50,000-100,000:-										
Klang Town Council	45,969		12,377		14,958		2,345		75,649	
Johore Bahru Town Council	33,302		28,920		7,374		5,313		74,909	
Malacca Municipality	53,131		9,351		4,904		2,462		69,848	
Alor Star Town Council	25,588		20,280		6,180		867		52,915	
Seremban Town Council	34,427		6,160		7,673		3,831		52,091	
Total:	192,417	59.1	77,088	23.7	41,089	12.6	14,818	4.6	325,412	100.0

Appendix VI. (Continued)

Gazetted areas with Population	Chinese		Malays		Indians*		Others		Total	
	Persons	%	Persons	%	Persons	%	Persons	%	Persons	%
Gazetted areas with pop. of 20,000-50,000:-										
Taiping Town Council	28,393		8,943		8,352		2,518		48,206	
Butterworth Town Council	21,707		10,190		9,505		1,102		42,504	
Bandar Penggaram Town Council	26,413		9,427		2,124		1,330		39,294	
Bandar Maharani Town Council	24,775		11,310		2,054		907		39,046	
Kota Bharu Town	11,011		25,305		1,228		559		38,103	
Telok Anson Town Council	23,316		7,216		6,006		504		37,042	
Kluang Town Council	19,599		7,437		2,586		1,559		31,181	
Kuala Trengganu Town	5,644		22,805		721		276		29,446	
Bukit Mertajam Town Council	19,015		2,468		2,881		299		24,663	
Kampar Town Council	20,544		1,516		2,350		192		24,602	
Kuantan Town Council	12,703		8,006		1,615		710		23,034	
Sungei Patani Town Council	13,272		5,445		3,536		663		22,916	
Ayer Item Village	18,508		1,725		1,880		256		22,369	
Total:	244,900	58.0	121,793	28.8	44,838	10.6	10,875	2.6	422,406	100.0
Gazetted areas with pop. of 10,000-20,000:-										
Total:	153,965	63.6	57,016	23.5	26,238	10.8	5,029	2.1	242,248	100.0
Gazetted areas with pop. of 5,000-10,000:-										
Total:	210,726	66.3	78,036	24.6	24,445	7.7	4,751	1.5	317,958	100.0

Appendix VI. Classification of Population by locality Size

Gazetted areas with Population	Chinese		Malays		Indians*		Others		Total	
	Persons	%	Persons	%	Persons	%	Persons	%	Persons	%
Gazetted areas with pop. of over 100,000:-										
City of Singapore	709,611	77.8	100,531	11.0	79,962	8.8	22,239	2.4	912,343	100.0
Kuala Lumpur Municipality	195,822	61.9	47,615	15.1	53,505	16.9	19,288	6.1	316,230	100.0
City of George Town	171,245	72.9	26,757	11.4	32,029	13.6	4,872	2.1	234,903	100.0
Ipoh Town	84,319	67.0	19,336	15.4	16,164	12.9	5,951	4.7	125,770	100.0
Total:	1,160,997	73.1	194,239	12.2	181,660	11.4	52,350	3.3	1,589,246	100.0
Gazetted areas with pop. of 50,000-100,000:-										
Klang Town Council	45,969		12,377		14,958		2,345		75,649	
Johore Bahru Town Council	33,302		28,920		7,374		5,313		74,909	
Malacca Municipality	53,131		9,351		4,904		2,462		69,848	
Alor Star Town Council	25,588		20,280		6,180		867		52,915	
Seremban Town Council	34,427		6,160		7,673		3,831		52,091	
Total:	192,417	59.1	77,088	23.7	41,089	12.6	14,818	4.6	325,412	100.0

Appendix VII. Economic activity status by state and by sex of population aged 10 and over by ethnic groups.

(percentage)

Chinese	Males			Females		
	Total Persons	active	inactive	Total Persons	active	inactive
Singapore	364,707	73.5	26.5	357,957	21.9	78.1
Selangor	170,282	70.3	29.7	162,947	26.2	73.8
Penang	112,250	68.2	31.8	113,093	12.1	87.9
Perak	187,292	69.2	30.8	179,599	27.1	72.9
N.Sembilan	54,063	73.8	26.2	47,231	39.6	60.4
Johore	138,316	72.1	27.9	119,990	27.8	72.2
Malacca	41,967	71.1	28.9	38,863	18.3	81.7
Pahang	41,739	75.6	24.4	32,796	41.8	58.2
Trengganu	7,476	76.2	23.8	5,420	19.9	80.1
Kelantan	10,820	72.4	27.6	9,011	25.3	74.7
Kedah	52,267	72.9	27.1	44,934	15.7	84.3
Perlis	5,759	76.4	23.6	4,735	17.3	82.7
Malaya	1,186,938	71.7	28.3	1,116,576	23.9	76.1
Malays						
Singapore	67,055	80.0	20.0	57,738	6.3	93.7
Selangor	96,775	75.7	24.3	89,494	11.9	88.1
Penang	55,593	70.5	29.5	58,294	11.5	88.5
Perak	158,812	75.2	24.8	159,586	18.9	81.1
N.Sembilan	47,377	73.9	26.1	49,606	29.8	70.2
Johore	147,965	74.1	25.9	138,792	19.3	80.7
Malacca	40,897	68.1	31.9	51,072	17.1	82.9
Pahang	61,040	80.4	19.6	59,824	27.6	72.4
Trengganu	84,577	77.0	23.0	90,220	25.4	74.6
Kelantan	156,390	75.0	25.0	163,951	36.8	63.2
Kedah	157,731	76.8	23.2	161,666	28.9	71.1
Perlis	24,356	76.7	23.3	25,227	32.5	67.5
Malaya	1,092,568	75.5	24.5	1,105,470	23.2	76.8

Appendix VII. (Continued)

Indians	Males			Females		
	Total Persons	active	inactive	Total Persons	active	inactive
Singapore	69,163	88.8	11.2	21,665	7.1	92.9
Selangor	78,621	81.4	18.6	53,533	45.3	54.7
Penang	31,781	80.4	19.6	17,107	14.9	85.1
Perak	69,751	80.6	19.4	48,417	45.3	54.7
N.Sembilan	20,717	83.9	16.1	13,906	53.5	46.5
Johore	29,113	86.1	13.9	16,689	54.6	45.4
Malacca	9,241	82.8	17.2	5,950	50.6	49.4
Pahang	8,912	88.5	11.5	5,379	57.4	42.6
Trengganu	1,813	93.6	6.4	360	27.2	72.8
Kelantan	2,766	88.5	11.5	1,169	54.7	45.3
Kedah	26,062	85.1	14.9	17,571	56.8	43.2
Perlis	795	88.6	11.4	294	15.3	84.7
Malaya	348,735	83.8	16.2	202,040	41.4	58.6

Source: Censuses of Population of Singapore and the Federation, 1957.

Appendix VIII. Average yield of rice in selected countries

(Kg./hec.)

Selected Country	1948-49/1952-53 (four-year average)	1963-64
Burma	14.6	15.6
Thailand	13.1	15.9
South Viet-Nam	13.6	21.0
Cambodia	9.8	12.0
Indonesia	16.1	17.4
Philippines	11.8	12.2
Ceylon	12.2	18.1
India	11.1	15.4
Taiwan	22.1	35.0
China	21.7	-
Japan	42.5	52.4
Malaya	20.1	22.9
Asia total	14.0	17.8
World total	16.0	20.5

Source: F.A.O. "Production Yearbook" 1964, Vol. 18, p. 54, Table 21.

Note: 1 Kg. = 2.2 lbs.

1 hectare = 2.47 acres.

Appendix IX.

The Malay Reservation Enactment

The British colonial policy was aimed at safeguarding the interests of the Malays, and in order to prevent Malay land from falling into the hands of the immigrant population of Chinese and Indians, the Federated Malay States Government passed the Malay Reservation Enactment in 1913, forbidding the transfer or lease of land within a Reservation from a Malay to a non-Malay. However, Chinese and Indian creditors soon found a loophole by employing Malay nominees to hold foreclosed land in the Reservations on their behalf. By the 1930's, a certain number of land in Malay Reservations was under charge. An amendment to the Malay Reservation Enactment was passed in 1933, which stopped the disposal of reserved land by charge, lease or any other means to non-Malays, and decreed that such land could not be acquired in discharge of a debt.

Some of the important clauses of the Enactment may be briefly summarized as follows:

15th Dec., 1933.

An Enactment to Amend and consolidate the law relating to Malay Reservations and to provide for securing to Malays their interests in land.

Section 2 - "Malay" means person belonging to any Malayan race who habitually speaks the Malay language or any Malayan language and professes the Moslem religion. "Malay holding" includes any registered interest of a Malay or co-proprietor in any alienated land included in a Malay Reservation declared under provisions of this Enactment and Enactment of 1913.

Section 3 - The Resident with the approval of the Ruler of the State in Council may by notification in the Gazette declare any area of land within the State to be a Malay Reservation. Boundary of area may be altered and revoked. Any State land, reserved forest, land reserved for a public purpose or alienated land may be included in a Malay Reservation.

Section 7 - No State land included within a Malay Reservation shall be sold, leased or otherwise disposed of to any person not being a Malay.

Section 8 - (i) Subject to the provisions of sub-section (ii) and of section 16 and 17 - no Malay Holding shall be transferred charged, leased or otherwise disposed of to any person not being a Malay Reservation. (ii) If any land included in a Malay Reservation is sub-divided and one or more of the proprietors of such land are Malays and one or more of the proprietors of such land are persons who are Malays - cross transfers are allowed.

Section 9 - Every memorandum of transfer, charge or less of a Malay holding must be executed only by a Malay.

Section 10 - No lien by deposit of the issue document of title for any Malay holding as security for a debt shall be capable of being created in favour of any person and no caveat in support of any such lien by deposit

shall be capable of registration in any Land Office or Registry of Titles.

Section 12 - No Malay holdings shall vest in the official Assignee on the bankruptcy of the proprietor thereof - except those filed before commencement of this Enactment (8 of 1934).

Section 13 - No Malay holding shall be attached in execution of a decree or order of any court - unless the suit or proceeding was made before (8 of 1934).

Section 14 - Every trust or alleged trust created in respect of any Malay holding by the proprietor thereof in favour of or for the benefit of any person not a Malay shall be null and void and incapable of being enforced by any court.

Section 15 - No grant of probate or of letters of administration shall operate to vest any Malay holding in any executor or administrator who is not a Malay.

Section 17 - Land may be changed to Government and to certain Co-operative Societies.

Sources: The Laws of the F.M.S. 1934, Revised Edition, prepared by W. S. Gibson, 4 vols., Vol. III. (London, 1935). pp. 2172-2176.

Appendix X.

Types of industries in the Jurong Estate.

According to the Economic Development Board of Singapore, the various types of industries are designed as the following zones:

(1) Light Industry Zone

This zone totalling 127 acres will be divided into lots ranging from $\frac{1}{4}$ acre up to a maximum of 10 acres, accommodating industrial buildings varying from 3,000 sq.ft. to 250,000 sq.ft. in floor space.

These lots are planned for light industries without exceptional requirements in buildings, transportation and utilities. The types of industries that are expected to establish themselves in these areas may include:

Industries concerned with bakery products, confectionery, beverages, pharmaceuticals, cigarettes, stationery, publishing and printing, packing and filling, electrical and radio products, leather products, textiles, furniture, plastics, paints, inks, light engineering, etc.

(2) Heavy and General Industry Zone

This zone totalling 265 acres has a flexible policy with regard to land alienation. Lots within this zone will be designed individually to suit the particular needs of each industry. Factories for the heavy industries also vary in sizes in accordance with the magnitude of the industries. Hence all applications regarding sites and factories for heavy industries will be considered according to individual merits.

The following types of industries are expected to establish themselves in the heavy industrial zone:-

Industries concerned with iron and steel production; ship breaking, ship building and repair, boat building; timber processing rubber and latex

processing; mineral and vegetable oil processing; grain milling; metal part manufacture, wire drawing, coir fabrics, paints, paper milling, glass, tins, cartons; fertilisers; fruit processing, animal feeds, fish processing and packing; machine assembly.

(3) Special Zone

This zone, as with the zone for heavy industries, will have lots specifically designed to suit the individual needs of industries which require special services:-

(a) Industries which require bulk handling of dry raw materials or products in sufficient quantities that entail special handling system, e.g. conveyor systems. These industries have to be located near the wharf because of the expense of mechanical handling devices over long distances, e.g. cereal importers, flour mills, animal feed mills, phosphate grinders and cement works.

(b) Industries which import or export liquid raw materials in bulk require special services such as pipe-lines, e.g. Petro-Chemical works, oil blenders, palm oil, edible oil improvers and latex exporters.

(c) Noxious industries which produce fumes, smells, exceptional noise and undesirable wastes require to be separated from certain other industries, e.g. food industries. These wastes may be discharged directly into the Jurong River or into sewage system or they may have to be specially treated by the industries concerned before they are discharged. Here again, the wharf requirements will have to be considered individually.

(d) Industries such as sawmills, plywood factories and small-boat builders will be given direct water frontage.

Source: Economic Development Board, Singapore.

Select Bibliography

AKHURST, C. G. and HAINES, W. B.
Description of soils at the Rubber Research Institute Experiment Station; "Journal of the Rubber Research Institute of Malaya" Vol. 3, 1931. pp. 174-181.

ALLEN, D. F.
Report on the Major Ports of Malaya; Government Printing Office, Singapore, May, 1950.

Do.
Report on the Minor Ports of Malaya; Government Printing Office, Singapore, 1953.

ALLEN, E. F.
Master Farmers of Malaya; "The Malayan Agricultural Journal", Vol. 40, No. 2, 1957.

ALLEN, G. C. & DONNITHERNE, A. G.
Western enterprise in Indonesia & Malaya; George Allen & Unwin Ltd., London, 1957.

ANG, K. P.
Report on the prawn pond industry in Singapore, 1961. (in Chinese); Social Science Society, Nanyang University, Singapore, 1963.

Do.
The Rubber Industry in Malaya; Diploma Dissertation, Department of Georgraphy, University of Edinburgh, 1964.

AWBERRY, S. S. & DOLLEY, F. W.
Labour and Trade Union Organization in the Federation of Malaya and Singapore; London, 1948.

AZIZ, U. A.
Facts and Fallacies of Malay Economy; "Straits Times, Singapore: A series of four articles", February 28 to March 5, 1957.

Do.
Land Disintegration and Land Policy in Malaya; "The Malayan Economic Review", Vol. III, No. 1. April, 1958.

Do.
The Interdependent Development of Agriculture and other Industries; "The Malayan Economic Review", Vol. IV, No. 1. April, 1959.

Do.
Prospects for Economic Growth in Asia; "Australian Institute of Political Science", 27th Summer School, Canberra 1961.

BARTON, Thomas Frank,
Rural and Urban dwellers of South East Asia; "Journal of Geography" Vol. 64, No. 3, March 1965. p. 113-122.

BASTIN, J. & ROOLVINK, R., (eds.)
Malayan and Indonesian Studies; Oxford, 1964.

BAUER, P. T.
"Rubber production costs during the great depression"; "Economic Journal" Vol. LIII (December 1943) pp. 361-369.

Do.
"The working of Rubber Regulation"; "Economic Journal" Vol. LIV (September 1946) pp. 391-414.

Do.
"The Economics of Planting Density in Rubber Growing"; "Economica", Vol. XIII (May 1946) pp. 131-135.

Do.
Report on a Visit to rubber smallholdings, 1946; "Colonial Office Research Publication No. 1" 1948.

Do.
"Malayan Rubber Policies"; "Economica" Vol. XIV (May 1947) pp. 81-107.

Do.
The rubber Industry; Harvard University Press, 1948.

Do.
Economic analysis and policy in underdeveloped countries; London, 1957.

BAUER, P. T. & YAMEY, B. S.,
The economics of underdeveloped countries; London, 1957.

BAUER, P. T.
West African trade: a study of competition, ologopoly and monopoly in a changing economy; Cambridge University Press, 1954.

Do.
Indian economic policy and development; Allen and Unwin, London, 1961.

Do.
The study of underdeveloped economies; an inaugural lecture; Bell, London, 1963.

BENHAM, Frederic.
"The Rubber Industry"; "Economica" Vol. XVI (November 1949) pp. 355-368.

Do.
Western Enterprise in Indonesia and Malaya; "The Malayan Economic Review" Vol. II, No. 2, October 1957.

BENHAM, F.,
The Commonwealth Economy in South East Asia; "International Affairs" Vol. 36 1960, No. 2 - April. pp. 206-210.

BENHAM, F. and HOLLEY, H. A.
A short Introduction to the Economy of Latin America; Oxford University Press, London, 1960.

BENHAM, F. C. C.
The National income of Singapore, 1956; "Royal Institute of International Affairs" Chatham House Memoranda. Oxford University Press, 1959.

Do.
The National Income of Malaya, 1947-49; Singapore Government Printing Office, 1951.

BICANIC, R.
The Threshold of Economic Growth; "KYKLOS" Vol. XV. 1962, pp.7-28 and Vol. XVI. 1963, p. 325.

BARTON, Thomas Frank.
Rural and Urban dwellers of Southeast Asia; "Journal of Geography" Vol. 64. No. 3. March 1965. p. 113-122.

BECKFORD, G. L. F.
"Secular fluctuations in the growth of tropical Agricultural trade"; "Economic Development and Cultural Change" Vol. XIII, No. 1, Pt. 1, October 1964. pp. 80-94.

BILAS, R. A.
Growth of Physical Output in the Federationof Malaya: 1930-1960; "The Malayan Economic Review" Vol. VIII, No. 2. October 1963.

BLAUT, J. M.
The Economic Geography of a One-acre farm on Singapore Island: a Study in Applied Micro-Geography; "The Journal of Tropical Geography" Vol. 1, October 1953. pp. 37-48.

BLYTHE, W. L.
"Historical Sketch of Chinese Labour in Malaya"; "Journal of the Malayan Branch of the Royal Asiatic Society", XX, pt. I. (June 1947), pp. 64-114.

BOTTOMLEY, Anthony.
The Role of Foreign Branch Plants in the Industrialisation of Singapore; "The Malayan Economic Review" Vol. VII, No. 1, April 1962.

Do.
Some Economic Implications of the Proposed Malaysian Federation from the Point of View of Singapore; "The Malayan Economic Review" Vol. VII, No. 2, October 1962.

BROEK, Jan O. M.
Resources of the Tropics: Southeast Asia; "Focus" IV. 6, New York, 1954.

BRYCE, M. D.
Industrial Development; London, 1960.

BURDON, T. W.
Singapore Fishing Methods; "Journal of the Malayan Branch of the Royal Asiatic Society", Vol. 27, 1954.

Do.
The Fishing Industry of Singapore; Eastern Universities Press Ltd., Singapore.

CADY, J. F.
South-East Asia: Its Historical Development; New York 1964.

CAIRNCROSS, A. K.
Factors in economic development; London 1962.

CALDWELL, J. C.
Some implications of past population growth and likely future trends in Malaya; "Population Review" Vol. 7, No. 2, July, 1963. pp. 43-52.

Do.
Urban Growth in Malaya: Trends and Implications; "Population Review" Vol. 7, No. 1, January 1963.

Do.
New and Old Malaya: aspects of demographic change in a high growth rate, multiracial society; "Population Review" Vol. 8, No. 2, July 1964, p. 29-36.

Do.
Fertility Decline and Female Chances of Marriage in Malaya; "Population Studies" Vol. XVII, 1963-64. July 1963, p. 20.

CALLIS, H.G.
Foreign Capital in South-East Asia; New York, 1942.

CAINE, S.
The importance of capital; "The Malayan Economic Review" Vol. I, No. 1, June 1956.

CAINE, Sir Sydney.
Prices for Primary Producers; Institute of Economic Affairs Ltd., 1963.

CANT, R. G.
Historical reasons for the retarded development of Pahang state, eastern Malaya; "New Zealand Geographer" Vol. 21, No. 1, April 1965, p. 26-37.

CHAN, Kwong Wah.
A Study of the Supply Response of Malayan Rubber Estates Between 1948 and 1959; "The Malayan Economic Review" Vol. VII, No. 2, October 1962.

CHANG, C. W.
Extension Education for Agricultural and Rural Development; Bangkok, Food and Agricultural Organisation, March 1963.

CHENERY, H. B.
The Role of Industrialization in Development Programmes; "American Economic Review" May, 1955.

CHICAGO, University of
Essays on Geography and Economic Development; Department of Geography Research Paper No. 62, Chicago, 1960.

CHONG, Seck-Chim.
The Development of Kuala Lumpur District; "The Journal of Tropical Geography" Vol. 3, October 1954.

CHOU, K. R.
The post-war trend of capital formation in Malaya against the background of South-East Asia; London School of Political and Economic Science, Ph.D. Thesis (Econ) 1955.

CLARK, Colin.
The Location of Industries and Population; "The Town Planning Review" Vol. XXXV, 1964-65, pp. 195-218.

CLAWSON, Marion.
Natural Resources and International Development; John Hopkins Press, 1964.

CLAYTON, Eric S.
Agrarian Development in Peasant Economies; Oxford: Pergamon Press, 1964.

CONCANNON, T. A. L.
A New Town in Malaya: Petaling Jaya, Kuala Lumpur; "The Journal of Tropical Geography" Vol. 5, March 1955.

COOK, J.
Future notes on the Marketing of Smallholding Latex: "Malayan Agricultural Journal" Vol. XXXVI No. 3, July 1953.

Do.
Review of Methods of Yield (Rice) Improvement; "The Malayan Agricultural Journal" Vol. 41, No. 4, 1958.

COOKE, Elena M.
Rice Cultivation in Malaya; Donald Moore, Singapore, 1961.

COPELAND, E.G.
Rice; London, 1924.

COOPER, E.
Urbanization in Malaya; "Population Studies" Vol. V. 1951, p. 117.

COULTER, J. K.
Development of the peat soils of Malaya; "Malayan Agricultural Journal" Vol. 40, 1957, pp. 188-199.

COURTENAY, G. E.
The Resuscitation of Malayan Canned Pineapple Industry; "Malayan Agricultural Journal" Vol. 30, 1947.

COURTENAY, P. P.
International Tin Restriction and its Effects on the Malayan Tin Mining Industry; "Geography" Vol. 46, 1961, p. 223.

Do.
Penang: the economic geography of a free port: Ph.D. Thesis (Arts) London (Ext.) 1962.

COWAN, C. D.
Nineteenth-Century Malaya; Oxford University Press, 1961.

Do.
The Economic Development of South-East Asia; George Allen & Unwin Ltd., London, 1964.

CZAMANSKI, Stanislaw.
Industrial Location and Urban Growth; "Town Planning Review", Vol. 36, No. 3, 1965. p. 165.

DALE, W. L.
The Rainfall of Malaya, Part I; "The Journal of Tropical Geography" Vol. 13, December 1959.

Do.
The Rainfall of Malaya, Part II; "The Journal of Tropical Geography" Vol. 14, July 1960.

DANNETT, J. H.
The classification and properties of Malayan soils; "Malayan Agricultural Journal" Vol. 21, No. 8, 1933.

DARTFORD, G. P.
A short History of Malaya; Longmans, 1956.

DAVIDSON, L. R.
Small-holders Advisory Service; "Malayan Agricultural Journal" Vol. XXX, No. 4, 1947.

DAVIS, S.G. (ed.)
Symposium on land use and mineral deposits in Hong Kong, South China and South East Asia; Hong Kong University Press, 1964.

DEASY, G. F.
Localization of Sumatra's oil palm industry; "Economic Geography" 1942, p. 153-158.

DE BLANK, S.
Co-operation and Integration in Oil Palm Research; "World Crops", Vol. 5, No. 6, 1953.

DE GRAFT-JOHNSON, J. C.
"An Introduction to the African Economy"; London 1959.

DEL TUFO, M.V.
Malaya, comprising the Federation of Malaya and the Colony of Singapore; a report on the 1947 Census of Population; Kuala Lumpur, Government Printer, London, Crown Agents for the Colonies (1949).

DEGANI, A. H.
The Land Development Authority; "The Malayan Economic Review" Vol. IX, No. 2, October 1964.

DOBB, Maurice.
An Essay on Economic Growth and Planning; Routledge & Kegan Paul, London, 1960.

Do.
Economic Growth and Underdeveloped Countries: International Publishers, New York, 1963.

DOBBY, E. H. G.
Resettlement patterns in Malaya; "Economic Development & Cultural Change" Vol. I, 1952, pp. 163-189.

Do.
Recent Settlement Changes in South Malaya; "The Journal of Tropical Geography", Vol. 1, October 1953, p. 1-8.

Do.
Recent Settlement Changes in the Kinta Valley; "The Journal of Tropical Geography", Vol. 2, March 1954, p. 62.

Do.
Southeast Asia; University of London Press Ltd., 1956.

Do. (ed.)
Padi Landscapes of Malaya; "The Journal of Tropical Geography" Vol. 10, June 1957.

DUBAS, Floyd J. & HILLSON, Louise H.
Basic data on the economy of Malaysia; "U.S. Bureau of International Commerce Overseas business reports (64-65)" March 1964.

DUBEY, V.
The Marketed Agricultural Surplus and Economic Growth in Underdeveloped Countries; "The Economic Journal" Vol. LXXIII, December 1963.

DUDAL R. & MOORMANN, F.R.

Major soils of South-East Asia: their characteristics, distribution, use and agricultural potential; "The Journal of Tropical Geography" Vol. 18, August 1964, pp. 54-80.

DWYER, D. J.
Economic development in South-east Asia: problems and prospects; Extract from: "Journal of the Institute of Bankers" June, 1964, pp. 1-12.

Do.
Size as a Factor in Economic Growth - some reflections on the case of Hong Kong; "Tijdschrift voor Economiche en Sociale Geografie", 56 Ste Jaargang, No. 5, Sept/Okt. 1965, p. 186.

ECONOMIST Intelligence Unit
An Economic Geography of the Commonwealth; Blackie & Son Ltd., London & Glasgow, 1957.

FARMER, B. H.
The Ceylon Ten-Year Plan, 1959-68; "Pacific Viewpoint" Vol. 2, No. 2, 1961.

FEDERATED MALAY STATES,
Rice Cultivation Committee.
Report of the Rice Cultivation Committee; Federated Malay States Government Press, Kuala Lumpur, 1931.

FEDERATION OF MALAYA.
Report on rubber policy, Malayan Rubber Advisory Committee, 1947; Government Press, Kuala Lumpur.

Do.
Labour and trade union organisation in the Federation of Malaya and Singapore, report by S. S. Awbery and F. W. Dalley; Kuala Lumpur Government Printer, 1948.

Do.
Division of Nutrition, Institute for Medical Research.
A Report on the State of health, the diet and the economic conditions of groups of people in the lower income levels in Malaya by R. C. Burgess & Laidin Bin Alang Musa; Report Institute for Medical Research No. 13, September 1950, p. 44-76.

Do.
The expansions and progress of the Co-operative Consumers movement since 1951; Legislative Council Papers No. 46, 1952.

Do.
Final Report of the Rubber Smallholdings Enquiry Committee; Federal Legislative Council Paper No. 8 of 1952.

FEDERATION OF MALAYA

Resettlement and the development of new villages in the Federation of Malaya 1952; Legislative Council Papers No. 33, 1952.

Do.

Report of the Rice Production Committee; Government Printer, Kuala Lumpur, 1953.

Do.

Report on Community Development; Government Printer, Kuala Lumpur, 1954.

Do.

Government trading in rice; Legislative Council Papers No. 27, 1954.

Do.

Resettlement and the Development of New Villages in the Federation of Malaya, 1952; Legislative Council Paper, No. 33, Kuala Lumpur 1954.

Do.

An outline of the principles for the domestic implementation in Malaya of the International Tin Agreement, 1953; Legislative Council Papers No. 76, 1954.

Do.

Report of the Working Party set up to consider the Development of a Cacao industry in the Federation of Malaya; Government Printer, Kuala Lumpur, 1955.

Do.

Taxation and Replanting in the Rubber Industry; Government Printer, Kuala Lumpur, 1955.

Do.

Final Report of the Rice Committee; Government Printer, Kuala Lumpur,1956.

Do.

Report of the Committee to investigate the fishing Industry; Government Printer, Kuala Lumpur, 1956.

Do.

Interim statement of Industrial development policy; Legislative Council, No. 30, 1957.

Do.

Report on rural and Industrial Development Authority, 1950-1955 by D. E. M. Fiennes; Legislative Council No. 16, 1957.

Do.

Memorandum of the fluctuations in the price of natural rubber by P. F. Adams; Legislative Council No. 42, 1958.

FEDERATION OF MALAYA

Report of the Inquiry into the Port of Port Swettenham; Government Printer, Kuala Lumpur, 1958.

Do.

Second Five-Year Plan, 1961-65; Kuala Lumpur, 1960.

Do.

Report of the Commission of Enquiry into the Pineapple Industry in Malaya and Statement of Government's Future Policy for the Industry; Government Printer, Kuala Lumpur, Cmd. 19 or 1960.

Do.

1957 Population Census of the Federation of Malaya, Report Nos. 1-14 by H. Fell; J.M.N, Former Chief Statistician and Superintendent of Census, Federation of Malaya; Department of Statistics 1960.

Do.

Census of Agriculture, 1960, by S. Tsukiboyashi; Government Printer, Kuala Lumpur, 1960.

Do. , Ministry of Agriculture and Co-operatives.

Some Experiments on soil water Plant Relationship in Rice, by Seize Matsushime; Government Printer, Kuala Lumpur, 1962.

Do.

Policies and Measures leading toward greater diversification of the Agricultural Economy of the Federation of Malaya by The Ford Foundation, 1963; Government Printer, Kuala Lumpur.

Do.

Interim Review of Development in Malaya under the Second Five-Year Plan; Government Printer, Kuala Lumpur, 1963.

Do.

Survey of Manufacturing Industries, 1959, 1960 & 1961; Department of Statistics, Kuala Lumpur, 1963.

Do.

Federal Land Development Authority, Annual Report and Accounts, 1962 & 1963; Kuala Lumpur.

Do.

Oil Palm, Coconut, and Tea Statistics: Department of Statistics, Kuala Lumpur, 1964.

Do.

Report of the Drainage and Irrigation Division of the Ministry of Agriculture and Co-operatives, for the years 1961, 1962 & 1963, by Ow. Yang Hong Chiew; Government Printer, Kuala Lumpur, 1964.

FEDERATION OF MALAYA
Annual Report of the Department of Agriculture for the year 1961 by Mohamad Bin Jamil; Government Printer, Kuala Lumpur, 1964.

Do.
Annual Report of the Department of Agriculture for the year 1962 by Mohamad Bin Jamil; Government Press, Kuala Lumpur, 1965.

Do.
The Fifteenth Annual Report, 1963-64, Central Electricity Board; Kuala Lumpur 1964.

Do.
Monthly Statistical Bulletin 1963 & 1964; Department of Statistics, Kuala Lumpur.

Do.
Supplement to Monthly Rice Statistical Bulletin, 1963; Department of Statistics, Kuala Lumpur.

Do.
Rubber Statistics Handbook, 1962 & 1963, compiled by the Department of Statistics, Federation of Malaya.

Do.
Annual Report of the Ministry of Labour for the year 1961 by Thor Beng Chong, Kuala Lumpur, 1963; Government Press.

FEDERATION OF MALAYSIA
Official Year Book, 1963; Kuala Lumpur 1964.

Do.
Report of the Auditor-General on the Accounts of the Rural and Industrial Development Authority for the year ended 31.12.1961, Cmd. 7 of 1964; Government Printer, Kuala Lumpur.

Do.
First Malaysia Plan, 1966-1970; Kuala Lumpur 1965.

FERGUSON, D.S.
The Sungei Manik Irrigation Scheme; "Journal of Tropical Geography" Vol. 2, March 1954, pp. 9-16.

FERMOR, Sir Lewis L.
Report Upon the Mining Industry of Malaya; Government Press, Kuala Lumpur, 1940.

FIENNES, D. E. M.
The Malayan Federal Land Development Authority; "Journal of Local Administration Overseas" Vol. 1, No. 3, 1962, pp. 156-63.

FIRTH, Raymond.
Malay Fishermen: Their Peasant Economy; Kegan Paul, London, 1946.

Do.
The peasants of Malaya; "International Affairs" 26, 1950, p. 503-514.

FIRTH, R & YAMEY B. S.
Capital, Saving & Credit in Peasant Societies; George Allen & Unwin Ltd., London, 1964.

FISHER, C.A.
The Railway Geography of British Malaya; "Scottish Geographical Magazine" December 1948, p. 125.

Do.
Southeast Asia; "Geography" Vol. 47, November 1962, pp. 347-367.

Do.
Southeast Asia; the Balkans of the Orient?; "Geography" 47, 1962, pp.347-367.

Do.
The Geographical setting of the Proposed Malaysian Federation. Some Preliminary Considerations; "Journal of Tropical Geography" Vol. 17, May 1963.

Do.
Southeast Asia; London 1964.

FISK, E. K.
The Western Economist and the Southeast Asian Village Economy; "Australian Outlook" Vol. 15, No. 2, 1961.

Do.
The Mobility of Rural Labour and the Settlement of New Land in Underdeveloped Countries; "Journal of Farm Economics" Vol. XLIII, No. 4, Pt. 1, 1961, p. 761-78.

Do.
The Mechanisation of Agriculture Small-holdings in Underdeveloped Areas; "Malayan Economic Review" Vol. VI, No. 2, October 1961.

Do.
Special Development Problems of Plural Societies: The Malayan Example; "Economic Record" Vol. 38, No. 82, 1962.

Do.
Establishment Costs of Small Rice Farms: An analytical Model of Returns to Capital; "Malayan Economic Review" Vol. VII, No. 2, October 1962, p. 45.

Do.
Rural Development Problems in Malaya; "Australian Outlook" Vol. 16, No. iii, 1962, December, pp. 246-259.

FISK, E. K. & SILCOCK, T. H.
The Political Economy of Independent Malaya; Angus & Robertson Ltd., London, 1963.

FISK, E. K.
Planning in a Primitive Economy: From Pure Subsistence to the Production of a Market Surplus; "The Economic Record" Vol. 40, No. 90, June 1964, p. 156.

FITCH, F. H.
The Geology and Mineral Resources of the Neighbourhood of Kuantan, Pahang; Kuala Lumpur, 1952.

FRYER, D. W.
Economic Aspects of Indonesia Disunity; Pacific Affairs" Vol. 30, No. 3, 1957, pp. 195-208.

Do.
Indonesia: the economic geography of an underdeveloped country; University of London (Ext.) Ph.D. Thesis (Arts) 1958.

Do.
The "Million City" in Southeast Asia; "Geographical Review" 43, 1953, p. 474-494.

Do.
Food Production in Malaya; "The Austrialian Geographer", May 1954, p. 36.

Do.
The Development of Cottage and Small scale industries in Malaya and in S.E. Asia; "Journal of Tropical Geography" Vol. 17, May 1963.

Do.
World Economic Development; McGraw-Hill 1965.

GAITSKELL, Arthur.
The needs of developing Nations: the text of a lecture, 1964; Oxford, September, 1964.

GAMBA, Charles.
Synthetic Rubber and Malaya; Donald Moore for Eastern Universities Press, 1956.

Do.
Poverty, and Some Socio-Economic Aspects of Hoarding, Saving and Borrowing in Malaya; "Malayan Economic Review" Vol. III, No. 2, October, 1958.

Do.
The National Union of Plantation Workers: the history of the Plantation Workers of Malaya 1946-58; Donald Moore for Eastern Universities Press, Singapore, 1962.

GILL, R. T.
Economic development: Past & Present; New Jersey, 1963.

GINSBURG, N. and ROBERTS, C.F.
Malaya; University of Washington Press, 1958.

GINSBURG, N.
Atlas of economic development; Chicago, 1961.

GLASS, D. V.
Fertility and Birth Control in Developed Societies, and Some Questions of Policy for less Developed Societies; "The Malayan Economic Review" Vol. VIII, No. 1, April 1963.

GOH, Keng Swee
Entrepreneurship in a Plural Economy; "Malayan Economic Review" Vol. III, No. 1, April, 1958.

GOLAY, F. H.
The Philippines: Public Policy & National Economic Development; Cornell University Press, Ithaca, 1961.

GOURON, P.
The Tropical World; Longmans, 1961.

GRAY, B. S.
The Potential of the Oil Palm in Malaya; "Journal of Tropical Geography" Vol. 17, May, 1963, p. 127.

GREAT BRITAIN TECHNICAL CO-OPERATION DEPARTMENT.
Research assistance for the developing countries; Cmnd. 2433. H.M.S.O., 1964.

GREENWOOD, J. M. F.
Rubber smallholdings in the Federation of Malaya; "The Journal of Tropical Geography" Vol. 18, August 1964, p. 81-100.

GRIST, D. H.
Report Upon Agricultural Education in Ceylon, with Recommendations regarding Agricultural Education for Malaya, in Proceedings, F.M.S. 1912.

Do.
An Outline of Malayan Agriculture (New Imprsn.); London, published on behalf of the Department of Agriculture, Federation of Malaya, by the Crown Agents for the Colonies, 1950.

Do.
The Rice Problem; "Journal of Tropical Geography" Vol. 5, March 1955, p. 20.

Do.
Rice, 3rd Edition; London, 1959.

GULLICK, J. M.
Malaya; Ernest Benn Limited, London, 1963.

HALL, D. G. E.
A History of South-East Asia; Macmillan, 1955.

HARBISON, F., and MYERS, C. A.
Education, manpower, and economic growth: strategies of human resource development. (McGraw-Hill series in international development); New York, 1964.

HARING, Joseph E.
Dynamic Trade Theory and Growth in Poor countries; "KYKLOS" Vol. XVI, 1963, p. 371-391.

HARRISON, B.
A Short History of South-East Asia; London, 1954.

HARTLEY, C. W. S.
Investigations into the Mechanical Cultivation of Wet Padi, 1948-1949; Malayan Agricultural Journal" Vol. 32, No. 3, 1949.

HARVIE, C. H.
Export Multipliers and the Stability of the Federation of Malaya's Economy; "Malayan Economic Review" IX, No. 1, April 1964.

HAUSER, P. M.
Urbanization in Asia and the Far East; Proceedings of the joint UN/Unesco Seminar on urbanization in the ECAFE Region, Bangkok, 8-18 August, 1956; Calcutta 1957.

Do. (edited)
Urbanization in Latin America, UNESCO, Technology and society series; Belgium 1961.

HAUSER, Philip Morris & SCHNORE, L. F.
The Study of Urbanization; London, New York, 1965.

HAWKING, G. and GIBSON-HILL, C. A.
Malaya; Government Printer, Singapore, 1952.

HAYNES, A. S.
Extension of Rice Cultivation in the F.M.S.: Need for a Definite Policy; F.M.S. 1933.

HAYNES, D. W. M.
Rice Mechanisation in the Federation of Malaya; The International Rice Commission News Letter No. 16 (December 1955).

H.M.S.O.
Report on Potentialities for the Cultivation of Cocoa in Malaya, Sarawak and N. Borneo, by Chesseman, E. E. Col. No. 230; London, 1948.

H.M.S.O.
An Economic Survey of the Colonial Territories, Vol. 5: The Far Eastern Territories - Malaya, Singapore, Hong Kong, Brunei, N. Borneo and Sarawak, Col. No. 281-5; London, 1955.

H.M.S.O.
Commonwealth Development Co-operation for 1964; London, 1965.

HIBBERT, F. W.
A review of the World trade in rubber; "Tropical Science" Vol. V. No. 2, 1963.

HIGGINS, B.
Indonesia's Economic Stabilization and Development; New York 1957.

Do.
Economic Development, Problems, Principles and Policies; Constable and Co. Ltd., London, Copyright 1959.

HILTON, T. E.
The Economic Development of the South-Eastern Coastal Plains of Ghana; "Journal of Tropical Geography" Vol. 16, October 1962.

HO, H. C. Y.
A comparative study of post-war industrial development in Singapore and Hong Kong; M.Sc. Thesis (Econ), L.S.E., London, 1962.

HO, Robert.
Mixed-Farming and Multiple-cropping in Malaya; "Journal of Tropical Geography" Vol. 16 October 1962.

Do.
Land Settlement Projects in Malaya: An assessment of the Role of the Federal Land Development; "Journal of Tropical Geography" Vol. 20, June 1965, pp. 1-15.

HODDER, B. W.
Man in Malaya; University of London Press, 1959.

Do.
Racial Grouping in Singapore; "Journal of Tropical Geography" Vol. 1, October 1953, pp. 25-36.

Do.
Biogeographical Aspects of Settlement in Malaya; "Journal of Tropical Geography" Vol. 5, March 1955.

Do.
Population and Economic Development in Southeast Asia: "Geography" Vol. 41 1956, p. 131.

HOOVER, Calvin B.
Economic Systems of the Commonwealth; Cambridge University Press, London, 1962.

HSIEH, C.
Under-employment in Asia: Its Relation to Investment Policy; "International Labor Review" Vol. 66, July 1952, p. 30.

HUTCHINSON, C. S.
The basement rocks of Malaya and their paleogeographic significance in Southeast Asia; "American Journal of Science" March, 1961, p. 181-185.

INTERNATIONAL BANK FOR RECONSTRUCTION & DEVELOPMENT
The economic development of Malaya; The John Hopkins Press, Baltimore, 1955.

Do.
Report on the Economic Aspects of Malaysia: Under the Chairmanship of Mr. Jacques Rueff; Government Press, Kuala Lumpur, July 1963.

INTERNATIONAL LABOUR ORGANISATION
Asian Regional Seminar on the Prevention and settlement of industrial Disputes, Kuala Lumpur 7 - 19, December, 1961.

INTERNATIONAL LABOUR OFFICE
Year Book of Labour Statistics, 1963; Geneva.

INTERNATIONAL LABOUR CONFERENCE 49th Session, Geneva, 1965.
The Role of Co-operatives in the Economic and Social development of developing countries (Report 7/1); Geneva, I.L.O. 1964.

INTERNATIONAL RUBBER STUDY GROUP.
Rubber Statistical Bulletin, 1963, 1964 & 1965; Secretariat of the I.R.S.G., London.

JACK, H. W.
Rice in Malaya; Kuala Lumpur, 1923.

JACKSON, James C.
Smallholding rubber cultivation in Malaya, 1952-1962; "The Oriental Geographer" Vol. 9, No. 1, January 1965, p. 33-40.

JACKSON, R. N.
Immigrant Labour and the Development of Malaya: 1789-1920; Kuala Lumpur, Government Printer, 1961.

JARRETT, H. R.
The oil palm and its changing place in the economy of Sierra Leone; "Geography" Sheffield, 1957, p. 50-59.

Do.
The present setting of the Oil-Palm Industry: with special reference to West Africa; "Journal of Tropical Geography" Vol. 11, April, 1958, p. 59.

JENKINS, R. O.
"Rubber: Introduction and Expansion with Special Reference to Malaya"; "The Planter" February & March 1955.

JOHNSTONE, J. R.
Observations on Agricultural Development in Malaya; "Tropical Agriculture" Vol. 32, No. 4, October, 1955, p. 274.

JOSEPH, K. T.
Sedentary soils of Kedah and their suggested utilization; "The Journal of Tropical Geography" Vol. 18, August 1964, p. 101-110.

KENNEDY, J.
A History of Malaya, A.D. 1400-1959; London, 1962.

KINDLEBERGER, C.
International Economics; Illinois, 1952.

KING, A. W.
Changes in the tin mining industry of Malaya; "Geography" Vol. XXV, 1940, p. 130-4.

KIRBY, E. Stuart.
Some Political Aspects of Far Eastern Economic Development; International Secretariat 1950, Paper No. 4, Institute of Pacific Relations, New York.

KITAMURA Hiroshi
Capital Accumulation and the Theory of International Trade: "The Malayan Economic Review" Vol. III, No. 1, April, 1958.

KNORR, K. E.
World Rubber and its Regulation; Stanford, 1945.

KNOWLES, L. C. A.
The economic development of the British Overseas Empire; London 1924.

KUZNETS, S.
Six Lecturers on Economic Growth; Glencoe, 1959.

LAI, David C. Y. & DWYER, D. J.
Tsuen Wan: a new industrial town in Hong Kong; "The Geographical Review" Vol. 54, No. 2, April, 1964, p. 151-169.

Do.
Kwan Tong, Hong Kond; a study of industrial planning; "The Town Planning Review", Vol. 35, No. 4, Jan. 1965. pp. 299-310

LANGLEY, G. A.
Telecumminication in Malaya; "Journal of Tropical Geography" Vol. 17, May 1963.

LEVER, R. J. A. W.
Tea growing in Malaya; "World Crops" Vol. 14, No. 11, November 1962, pp. 374-377.

LEVIN, Jonathan V.
The Export Economies: Their Pattern of Development in Historical Perspective; Harvard University Press, 1960.

LEWIS, W. A.
Theory of economic growth; Unwin, 1955.

LIM Chew Swee
Report of the Industrial Development Working Party, Federation of Malaya, 1957; Government Printer, Kuala Lumpur, 1959.

LIM Chong Yah
Export Taxes on Rubber in Malaya - A Survey of Post-War Development; "The Malayan Economic Review" Vol. V, No. 2, October 1960.

Do.
The Malayan Rubber Replanting Taxes; "The Malayan Economic Review" Vol. VI, No. 2, October 1961.

LIM Joo-Jock
Tradition and Peasant Agriculture in Malaya; "Journal of Tropical Geography" Vol. 3 October 1954.

LIM Tay Boh
The Co-operative Movement in Malaya; Cambridge, 1950.

Do.
Economic and Financial aspects of social security, with special reference to Malaya; Ph.D. Thesis, (London) 1954.

Do.
The Role of the Civil Service in the Economy of Independent Malaya (Presidential Address Delivered at the Third Annual General Meeting of the Malayan Economic Society on September 26, 1958; "The Malayan Economic Review" Vol. IV, No. 1, April, 1959.

Do. (ed.)
Problems of the Malayan Economy; Donald Moore for Eastern Universities Press Ltd., Singapore.

Do.
The Planning of Social Security in Malaya; "The Malayan Economic Review" Vol. 1, No. 2, June 1956.

LYLE, F. J.
An Industrial Development Programme, Singapore Legislative Assembly Sess. Paper No. Cmd. 5 of 1959; Government Printer, 1959.

MA, Ronald
Company Profits and Prices in the Rubber Industry in Malaya, 1947-58; "The Malayan Economic Review" Vol. IV, No. 2, October, 1959.

Do.
Singapore - the Economic Challenge of a Growing Population; "Australian Outlook" Vol. 16, No. 1, April 1962, pp. 47-62.

MA, Ronald and YOU Poh Seng
The Economic Characteristics of the Population of the Federation of Malaya 1957; "The Malayan Economic Review" Vol. V, No. 2, October 1960.

Do. and Do.
The Malaysian Economy in Transition; Singapore, 1965.

MACBEAN, A. I.
Problems of stabilization Policy in Underdeveloped Countries; "Oxford Economic Papers" Vol. 14, October 1962, No. 3.

MCFADYEAN, Sir Andrew (ed.)
The History of Rubber Regulation 1934-1943; George Allen & Unwin Ltd., 1944.

MCGEE, T. G.
The Cultural Role of Cities, a case study of Kuala Lumpur; "Journal of Tropical Geography" Vol. 17, May 1963.

MACKENZIE, K. E.
Malaya: Economic and Commercial Conditions in Federation of Malaya and Singapore; H.M. Stationery Office, 1952.

MAKEPEACE, Walter (ed.)
One hundred years of Singapore, Vol. I, Chap. XI, pp. 578-592, Vol. II, Chap. XII, pp. 1-19; John Murray, London, 1921.

MARK, Joseph,
Raising Productivity in Singapore with case studies; Malaysia Books Ltd., Singapore, 1965.

MARTIN, F. J.
The oil palm industry; "Tropical Agriculture" Vol. 5, London, 1928, p. 189-193.

MERRIAM, Ida C.
Social Security and Economic Development: With Comments on Social Security Proposals for Singapore; "The Malayan Economic Review" Vol. 11, No. 2, October 1957.

MILLS, L. A.
Malaya - A Political and Economic Appraisal; London, 1958.

MILLS, Lennox A.
British Rule in Eastern Asia; a study of contemporary government and economic conditions in British Malaya and Hong Kong; London University Press, 1942.

Do.
Southeast Asia; illusion and reality in politics and economics; University of Minnesota Press, Minneapolis, 1964.

MOORHEAD, F. J.
A History of Malaya and her Neighbours, Vol. I; Longmans, 1957.

MORGAN, D. J.
International Compensatory Financing Applied to the Federation of Malaya and Singapore; "The Malayan Economic Review" Vol. VII, No. 2, October, 1962.

MOUNTJOY, A. B.
Industrialization and Under-Developed Countries; Hutchinson University Library, London, 1963.

MUDIE, R. F. (ed.)
Report of the Mission of Enquiry into the Rubber Industry of Malaya, 1954; Government Printer, Kuala Lumpur, 1954.

MYRDAL, G.
An International Economy; New York, 1956.

Do.
Economic theory and underdeveloped regions; Methuen, 1957.

NATURAL RUBBER BUREAU
"Natural Rubber News" (Monthly); Malayan Rubber Fund Board, Washington.

NESS, Gayl D.
Population Growth, Economic Development and Development Policies; "Journal of Tropical Geography" Vol. 17, May 1963.

Do.
Subdivision of Estates in Malaya 1951-1960: A Methodological Critique; "Malayan Economic Review" IX, No. 1, April 1964.

NEVILLE, R. J. W.
An Urban Study of Pontian Kechil, South-West Malaya; "Journal of Tropical Geography" Vol. 16, October 1962.

Do.
Singapore: recent trends in the sex and age composition of a cosmopolitan community: "Population Studies" Vol. 17, No. 2, November, 1963, pp. 99-112.

NEVILLE, R. J. W.
The Plantation in Malaya - case study of a pineapple plantation in South Johore: "TIJDSCHRIFT VOOR ECONOMISCHE EN SOCIALE GEOGRAFIE" 1964, pp. 57-69.

Do.
The Areal Distribution of Population in Singapore: "Journal of Tropical Geography" Vol. 20, June 1965, pp. 16-25.

NG, H. W.
Malaya's Export Trade: M.Sc. Econ. Thesis, L.S.E., London, 1960.

NURKSE, R.
Problems of Capital Formation in Underdeveloped countries; Oxford 1953.

Do.
Excess Population and Capital Construction; "The Malayan Economic Review" Vol. 11, No. 2, October 1957.

OEEC
Walter Isard & John H. Cumberland (editors)
Regional Economic Planning - Techniques of Analysis for less developed areas, 1961.

Do.
Problems of Development, Series of Lectures on Economic Growth: University of Madrid, 1961.

OOI Jin-bee
Mining Landscapes of Kinta; "Journal of Tropical Geography" Vol. 4, January 1955.

Do.
Rural Development in Tropical Areas, with Special Reference to Malaya; "Journal of Tropical Geography" Vol. 12 (1959).

Do.
The Nature and Distribution of the Natural Vegetation of Malaya: "Pacific Viewpoint" Vol. 1, No. 2, 1960.

Do.
The Rubber Industry of the Federation of Malaya: "Journal of Tropical Geography" Vol. 15, June 1961.

Do.
Land, People and Economy of Malaya; Longmans, 1963.

Do.
Some aspects of peasant farming in Malaya: Tijdschrift voor economische en sociale geografie" 56, jaargang No. 5, September-Oktober 1965, p. 170-185.

OPPENFELD, H. von (ed.)
Discussion on Agricultural Economics Research in South-East Asia: "The Malayan Economic Review" Vol. IV, No. 1, April 1959.

OSBORNE, Milton E.
Singapore and Malaysia; Itlaca, Cornell University, Department of Asian Studies, Southeast Asia program, 1964 (Data paper No. 53).

OWEN, G.
A provisional classification of Malayan soils; "Journal of Soil Science", Vol. II, Pt. I, 1951.

PAAUW, Douglas S.
Economic Progress in S. E. Asia: "The Journal of Asian Studies" Vol. XXIII, November 1963.

PANTON, W. P.
Reconnaissance soil survey of Trengganu: Department of Agriculture Bulletin, No. 105, Kuala Lumpur 1958.

Do.
Reconnaissance soil survey of Kelantan: "Malayan Agricultural Journal", Vol. 43, 1960, pp. 87-103.

Do.
The 1962 Soil Map of Malaya; "Journal of Tropical Geography" Vol. 18, 1964, pp. 118-124.

PARMER, J. N.
Colonial Labor Policy and Administration - A History of Labor in the Rubber Plantation Industry in Malaya, 1910-1941; New York 1960.

PARKINSON, C. N.
A Short History of Malaya; Eastern Universities Press Ltd., Singapore.

PASCOE, E. A. C.
Aspects of Planning for Agricultural Development in North Borneo; "Tropical Agriculture" Vol. 32 No. 3, 1955, July, p. 170.

PELZER, K. J.
Pioneer Settlement in the Asiatic Tropics: New York, 1945.

PHILLIPS, T. A.
Nucleus Plantations and Processing Factories: Their Place in the Development of organised Smallholder Production; "Tropical Science" Vol. VII, No. 3 1965.

PIM, Sir Alan.
Colonial Agricultural Production, the Contribution made by Native Peasants and by Foreign Enterprise; London, 1946.

PLATH, C. V.
Agricultural Productivity per Worker: Importance in South-East Asia; "The Malayan Economic Review" Vol. IV, No. 1, April 1959.

POLHAMUS, Loren G.
World crops series: Rubber; Leonard Hill (Books) Ltd., London, 1962.

POORE, M.E.D.
Problems in the classification of Tropical Rain Forest; "Journal of Tropical Geography" Vol. 17, May 1963.

PURCELL, V.
The Chinese in Malaya; Oxford University Press, London, 1948.

Do.
The position of the Chinese in Southeast Asia; International Secretariat Institute of Pacific Relations; Secretariat Paper No. 3, New York, 1950.

Do.
The Chinese in Southeast Asia; Oxford University Press, 1951.

Do.
"Malaysia"; Thames and Hudson, 1964.

PUTHUCHEARY, J. J.
Ownership and control in the Malayan economy; Eastern Universities Press, Singapore, 1960.

QUIRIN, G. David
The Problem of Structural Diversification; "Malayan Economic Review" Vol. IX, No. 1, April 1964.

Do.
Estate Subdivision and Economic Development: A Review Article; "Malayan Economic Review" IX, No. 1, April 1964.

RAMIAH, K.
Factors affecting rice production; F.A.O. Development Paper No. 45, Rome, 1954.

RATCHAGA, P. C.
The Future of Malaya's Natural Rubber; "The Malayan Economic Review" Vol. I, No. 1, June 1956.

RAY, G. F.
The Economy of Asian Spices; "The Malayan Economic Review" Vol. VIII, No. 2, April 1963, p. 45.

REDDAWAY, W. B.
The Development of the Indian Economy; George Allen & Unwin Ltd., London, 1962.

O'REILLY, J. M. H.
An Assessment of the Malayan Tin Mining Industry in the Twentieth Century; "Journal of Tropical Geography" Vol. 17, May 1963, p. 72.

RICHARDSON, J. A.
An Outline of the geomorphological evolution of British Malaya; "Geographical Magazine" (May-June 1947) pp. 129-144.

RIVKIN, A.
Cambridge Conference on Some Aspects of Development; "The Journal of Modern African Studies", Dar-es-Salaam, December, 1963, Vol. 1, No. 4, p. 543.

ROBEQUAIN, Charles A.
Malaya, Indonesia, Borneo, and the Philippines; Longmans, London, 1954.

ROBERTS, B. C.
Labour in the tropical territories of the Commonwealth; Bell, 1964.

Do.
Industrial relations: contemporary problems and perspectives; London, 1964.

ROBERTSON, C. J.
The integration of plantation agriculture in economic planning, with special reference to South East Asia; "Pacific Viewpoint", Vol. 4, 1963.

ROBERTSON, W.
The tin experiment in Commodity Market Stabilization; "Oxford Economic Papers", Vol. 12, No. 3, 1960, p. 310.

Do.
Report on the World Tin Position; London, 1965.

ROBINSON, E. A. G.
Economic Consequences of the Size of Nations; London, 1960.

do. (ed).
Problems of economic development; Macmillan 1965.

ROBINSON, R.
African Development Planning; Cambridge Conference on Some Aspects of Developments, Queen's College, Cambridge, 22 September - 5th October 1963.

do. (ed.)
Industrialisation in Developing Countries; Cambridge University, Overseas Studies Committee, 1965.

ROE, F. W.
The geology and Mineral Resources of the Fraser's Hill area, Selangor, Perak and Pahang, Federation of Malaya, with an Account of the Mineral Resources; Kuala Lumpur, 1951.

ROE, F. W.
The Geology and Mineral Resources of the Neighbourhood of Kuala Selangor, and Rasa, Selangor, Federation of Malaya, with an Account of the Geology of Batu Arang Coal-Field; Kuala Lumpur, 1953.

ROSTOW, W. W.
The take-off into self-sustained growth; "Economic Journal" March 1956.

Do.
The stages of economic growth; Cambridge, 1960.

RUBBER RES. INST. MALAYA
Fifteen years of estate replanting; "Planters' Bulletin" Vol. 66, 1963.

SANDHU, Kernial Singh
Chinese Colonization of Malacca, a study in population change 1500 to 1957; "Journal of Tropical Geography" Vol. 15, June 1961.

Do.
The Population of Malaya: Some changes in the pattern of distribution between 1947 & 1957; "Journal of Tropical Geography" Vol. 15, June 1961, p. 82.

Do.
Emergency resettlement in Malaya; "The Journal of Tropical Geography" Vol. 18, August 1964, p. 157-183.

SAVAGE, H. E. F.
The Geology of the Neighbourhood of Sungei Siput, Perak, F.M.S. with an Account of the Mineral Deposits; Singapore 1937.

SAW, S. H.
The demography of Malaya: with special reference to race differentials; Ph.D. Thesis (Econ), L.S.E. London, 1963.

SAW, Swee Hock
The Changing Population Structure in Singapore during 1842-1962; "Malayan Economic Review" IX, No. 1, April 1964.

SCHIDROWITZ P. & T. R. DAWSON
History of the Rubber Industry; W. Heffer & Sons Ltd., Cambridge, 1952.

SCOTT, J. S.
An Introduction to the Sea Fishes of Malaya; Government Printer, Kuala Lumpur, 1959.

SCRIVENOR, J. B.
The Origin of Tin Deposits; Kuala Lumpur, 1909.

Do.
The Geological History of Malaya; "Quarterly Journal of the Geological Society" Vol. 69, London 1913.

SCRIVENOR, J. B.
The physical geography of the southern part of the Malay Peninsula; "Geographical Review" Vol. 11, 1921, pp. 351-371.

Do.
The Structural geology of British Malaya; "Journal of Geology" Vol. 31, 1923, pp. 556-570

Do.
The Geology of Malaya; London, 1931.

SENDUT, Hamzah
Problems of Rural-Urban Migration in Malaya; "Community Development Bulletin" Vol. XII, No. 3, June 1961.

Do.
Patterns of Urbanization in Malaya; "Journal of Tropical Geography" Vol. 16, October 1962.

Do.
The Resettlement Villages in Malaya; "Geography" Vol. 47, 1962, p. 41.

Do.
The Structure of Kuala Lumpur; "Town Planning Review" Vol. 36, No. 2, July 1965, p. 125.

SHANNON, L. W. ed.
Under-developed Areas: A Book of Readings and Research 1957.

SHEN, T. Y.
Approaches to Economic Development; "Malayan Economic Review" Vol. IX, No. 1, April 1964.

SHERWOOD, P. W.
The Watson-Caine Report on the Establishment of a Central Bank in Malaya; "The Malayan Economic Review" Vol. II, No. 1, April 1957.

SIEW, Nim Chee.
The International Tin Agreement, 1953; "The Malayan Economic Review" Vol. II, No. 1, April 1957, p. 35.

SILCOCK, T. H.
Dilemma in Malaya; Fabian Society: Research Series No. 135.

Do.
Some Determinants of Economic Development; "The Malayan Economic Review" Vol. II, No. 1, April 1957.

Do.
Some problems of economic growth in British territories of S.E. Asia; "Weltwirtschaftliches Archiv", Vol. 80, 1958.

Do.
More Monopolistic Competition Theory; "Malayan Economic Review" Vol. III, No. 2, October 1958.

SILCOCK, T. H.
A Note on Futures Trading and the Singapore Rubber Market; "The Malayan Economic Review" Vol. III, No. 2, October 1958.

Do.
Towards a Malayan Nation; Donald Moore, Singapore, 1961.

Do.
The commonwealth economy in Southeast Asia; University Press, Cambridge, 1959.

Do.
The Economy of Malaya; Donald Moore for Eastern Universities Press Ltd., Singapore, 1960.

Do. (ed.)
Readings in Malayan Economics; Eastern Universities Press, Singapore, 1961.

Do.
Special Ethics and the Economics of Group Interest; "Malayan Economic Review" Vol. VIII, No. 2, October 1963.

SILCOCK, T. H. and FISK, E. K.
The Political Economy of Independent Malaya; Angus & Robertson Ltd., London, 1963.

SINGER, H. W.
The Concept of Balanced Growth in Economic Development - Theory and Practice; "The Malayan Economic Review" Vol. III No. 2, October 1958.

SINGH, Bhupinder
The Future of Malaya's Natural Rubber; "Malayan Economic Review" Vol. I, June 1956.

SMITH, Thomas Edward.
Population Growth in Malaya; an analysis of recent trends; Royal Institute of International Affairs, London, New York, 1952.

SPENCER, J. E.
Asia East by South; New York, 1954.

STALEY, E.
The Future of underdeveloped countries: Political Implications of Economic Development; New York, 1954.

STANTON, W. R.
An agricultural policy for Malaya; "World Crops" Vol. 17, No. 1, March 1965, pp. 20-26.

STARNER, Frances L.
Malaysia and the North Borneo territories; "Asian survey" Vol. 3, No. 11, November 1963, p. 519-534.

STATE OF SINGAPORE
Report of the Committee on Minimum Standards of Livelihood; Legislative Assembly Sessional Paper Cmd. 5 of 1957; Government Printing Office, Singapore, 1957.

Do.
Development Plan 1961-1964; Government Printer, Singapore, 1961.

Do.
Papers on Financial Arrangements; Government Printer, 1963.

Do.
Economic Planning Unit; First Development Plan 1961-64. Review of Progress for the three years ending 31st December, 1963; Prime Minister's Office, Singapore 1964.

Do.
Report on the Census of Population 1957; by S. C. Chua, Chief Statistician and Superintendent of Census, Singapore, Cmd. 19 or 1964.

Do.
Census of Industrial Production, 1960-61; Government Printer, Singapore, 1964.

Do.
Monthly Digest of Statistics, 1964; Department of Statistics, Singapore.

Do.
Economic Development Board, Annual Report, 1963; Singapore, 1965.

STEAD, D. G.
General Report upon the Fisheries of British Malaya; Sydney, 1923.

STOKES, R.
Malay Tin-Fields; Singapore, 1906.

SUMNER, J. H.
Highlands Hydro-Electric; "The Straits Times Annual Report for 1964", Singapore, 1965.

SWETTENHAM, Sir Frank.
British Malaya; Allen & Unwin, 1948.

SZCZEPANIK, Eduard F.
The Economic Growth of Hong Kong; Oxford University Press, London, 1958.

Do.
The Economic growth of Hong Kong, with special reference to post-war industrialization; Ph.D. Thesis (Econ.) University of London, 1959.

TAN SOO HAI, D. E.
The Rice Industry in Malaya, 1920-40; Malaya Publishing House Ltd., Singapore, 1963.

TAYLOR, Alastair M.
Malaysia, Indonesia - and Maphilindo; "International journal" Vol. 19, No. 2, Spring 1964, pp. 155-171.

TAYLOR, W. L.
Reflections on the economic role of education in underdeveloped countries; O.U.P., 1964.

TEMPANY, H. A.
The economics of the rice situation; "Malayan Agricultural Journal" Vol. XVIII, 1930.

TERRA, Ir. G. J. A.
Mixed Garden Horticulture in Java; "Journal of Tropical Geography" Vol. 3, October 1954.

THAYER, Philip W. (ed.)
Southeast Asia in the coming World; Baltimore, 1953,

THOMAS, Morgan D.
Imports, Industrialisation and the Economic Growth of Lesser Developed Countries; "The Professional Geographer" Vol. 13, 1961, pp. 13-16.

THOMPSON, K.
Malaya; "Focus" Vol. IX, No. 2, October 1958.

TOOVEY, F. W.
Field planting of oil palms; "Journal of the West African Institute for Oil Palm Research", 1953, p. 71.

TREGONNING, K. G.
Malaysia; University of British Columbia, Publication Centre, Vancouver, 1965.

TROLL, C.
Landscape Ecology and Land Development with special reference to the Tropics; "Journal of Tropical Geography" Vol. 17, May 1963.

UNGER, L.
The Chinese in Southeast Asia; "Geographical Review" 34, 1944, p. 196-217.

U.N. (Department of Economic Affairs)
Measures for the Economic Development of Under-developed Countries; New York, 1951.

U.N. (Department of Economic and Social Affairs).
Processes and Problems of Industrialization in Under-developed countries; New York, 1955.

U.N. (ECAFE)
Economic Commission for Asia and the Far East, Annual Survey, 1956.

UNITED NATIONS TIN CONFERENCE
International Tin Agreement 1953; Government Printer, Kuala Lumper, Article 1, 1958.

U.N.
The Population of Asia and the Far East, 1950-80; Report IV, New York, 1959.

U.N. Tin Conference
International Tin Agreement, 1960; Government Printer, Kuala Lumpur, 1960.

U.N.
International Compensation for Fluctuations in Commodity Trade; New York, 1961.

Do.
Report to the Economic and Social Council on the Tenth Session of the Commission on International Commodity Trade; New York, May 1962.

Do.
F.A.O.: "Food Commodity Review"; Special Supplement E/CN.13/48, 1962.

Do.
Aspects of Economic Development; EFHC Basic Study Series No. 8; F.A.O. Geneva, 1962.

Do.
Science and Technology for Development
Vol. III Agriculture
Vol. IV Industry
Vol. V People and living.
Vol. VI Education and training; New York, 1963.

Do. (ECAFE)
Regional economic co-operation: Report of the Ministerial Conference on Asian Economic Co-operation held at Manila, Philippines, 1964; U.N., New York, 1964.

Do.
(Economic Commission for Asia and the Far East.); Economic survey of Asia and the Far East, 1963, (17th); New York, 1964.

U.N.E.S.C.O.
Problems of humid tropical regions; Paris 1958.

U.N.
Statistical Yearbook, 1963 & 1964; New York.

VLIELAND, C. A.
British Malaya - A Report on the 1931 Census and on certain problems of vital statistics; London, 1932.

Do.
The 1947 Census of Malaya; "Pacific Affairs", Vol. 23, No. 1, 1949, p. 60.

VU QUOC THUC
Social research and problems of rural development in S. E. Asia; UNESCO.

WANG GUNGWU
Malaysia - A Survey; Pall Mall Press, London, 1964.

Do.
Short History of the NanYang Chinese; Eastern Universities Press Ltd., Singapore, 1959.

WARD, Marion W.
Recent Population Growth and Economic Development in Asia; "Pacific Viewpoint" Vol. 1, No. 2, 1960.

Do.
Malayan fishing ports and their inland connections; "Tijdschrift voor economische en sociale geografie", 55. Jaargang, No. 5, Mei 1964, pp. 113-122.

Do.
Port Swettenham and its hinterland 1900-1960; "Journal of Tropical Geography" Vol. 19, December 1964, p. 69.

WATTS, Kenneth.
Small Town Development in the Asian Tropics; "Town Planning Review" Vol. XXXIV, 1963-64, p. 19.

WHARTON, C. R.
The Economic Impact of Technical Assistance; "Journal of Farm Economics" Vol. XLIII, No. 2, May 1960.

Do.
Farm Management and Malayan Rural Development; "Malayan Agriculturist" Vol. 2, 1961-62.

Do.
Economic and Non-Economic Factors in the Agricultural Development of S.E. Asia: Some Research Priorities, CECA. Paper, New York: Council on Economic and Cultural Affairs, Inc., 1962.

Do.
Marketing, Merchandising and Moneylending: A Note on Middleman Monopsony in Malaya; "The Malayan Economic Review" Vol. VII, No. 2, October 1962.

WHARTON, C. R.
Education and Agricultural Growth, The Role of Education in Early Stage Agriculture; Anderson & Hoselitz, Eds: "Education and Economic Development".

Do.
The role of farmer education in agriculture growth; Agricultural Development Council, New York, 1963.

Do.
Research on Agricultural Development in South-East Asia; "Journal of Farm Economics", Vol. 45, No. 5, December 1963.

WHEATLEY, P.
Land Use in the Vicinity of Singapore in the Eighteen-Thirties; "Journal of Tropical Geography" Vol. 2, March 1954, pp. 63-66.

WHEELWRIGHT, E. L.
Reflections on Some Problems of Industrial Development in Malaya; "The Malayan Economic Review" Vol. VIII, No. 1, April 1963, p. 66.

Do.
Industrialization in Malaysia; Melbourne, 1965.

WIGHTMAN, D.
Toward Economic Co-operation in Asia; Yale University Press, 1963.

WIKKRAMATILEKE, R.
Mukim Pulau Rusa: land use in a Malayan riverine settlement; "Journal of Tropical Geography" Vol. II, April 1958.

Do.
Trends in Settlement and Economic Development in Eastern Malaya; "Pacific Viewpoint" Vol. 3, No. 1, 1962.

Do.
A Study of Planned Land Settlement in the Eastern Marshlands of Malaya; "Economic Geography" Vol. 38, October 1962, pp. 330-346.

Do.
Variable ethnic attributes in Malayan rural land development; "Pacific Viewpoint" Vol. 5, No. 1, May 1964, p. 35-50.

Do.
Focus on Singapore, 1964; "Journal of Tropical Geography" Vol. 20, June 1965, pp. 73-83.

WILLBOURN, E. S.
The Geology and Mining Industries of Kedah and Perlis; "J.R.A.S.M.B." December, 1926, p. 289-332.

WILLIAMS, F. H. P.
Report on Roads and Road Problems in Southeast Asia and the Caribbean; London 1957.

WILSON, Joan.
The Singapore Rubber Market; Eastern Universities Press, Singapore 1958.

WILSON, T. B.
Sungei Manik Irrigation Survey, 1956; "The Malayan Agricultural Journal" Vol. 40, No. 2, 1957.

Do.
The Economics of Padi Production in North Malaya. Part I: Land Tenure, Rents, Land Use and Fragmentation; Department of Agriculture Bulletin No. 103, Kuala Lumpur, 1958.

WINSTEDT, R. O.
Malaya and Its History; London, 1948.

WONG, L. G. J. (ed.)
Papers Presented at the Symposium on the Role of Management in Industrialization in Malaysia; "The Malayan Economic Review" Vol. VIII, No. 1, April, 1963, p. 1-29.

WORYTINSKY, W. S. and WOYTINSKI, E. S.
World Population and Production: Trends and Outlook; Twentieth Cent. Fund, New York, 1953.

WRIGHT, R. A. and others
Food Supplies for Singapore; Government Printer, Singapore, 1951.

WYCHERLEY, P. R.
Variation in the performance of Hevea in Malaya; "Journal of Tropical Geography" Vol. 17, May 1963.

YIP Yat Hoong
Malaya under the Pre-War International Tin Agreement; "The Malayan Economic Review" Vol. VIII, No. 1, April 1963.

Do.
The Domestic Implementation of the 1953 International Tin Agreement in Malaya; "The Malayan Economic Review" Vol. V, No. 2, October 1960.

Do.
The Marketing of Tin-ore in Kampar; "The Malayan Economic Review" Vol. IV, No. 2, October 1959.

YOU Poh Seng,
The Housing Survey of Singapore, 1955; "The Malayan Economic Review" Vol. II, No. 1, April 1957.

Do.
The Population Growth of Singapore; "The Malayan Economic Review" Vol. IV, No. 2, October, 1959.